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THE

PARADISE

WITHIN THE REACH OF ALL MEN,

WITHOUT LABOUR,

BY POWERS OF NATURE AND MACHINERY.

AN ADDRESS

TO ALL INTELLIGENT MEN.

IN TWO PARTS.

BY J. A. ETZLER.

FIRST PART.

Toil and poverty will be no more among men;
Nature affords infinite powers and wealth;
Let us but observe and reason.

The wise examines before he judges;
The fool judges before he examines.

LONDON:

JOHN BROOKS, 421, OXFORD STREET.

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PREFACE.

Look here, ye philosophers, ye speculators, ye epicureans, ye philanthropists, ye who seek the philosopher's stone, ye who undergo all hardships and dangers, and traverse the ocean from one extremity to the other in search of money;—a new, easy, straight and short road to the summit of your wishes is shown.—Ye who are tired of life's toil and vexations, drop your tool, pause a little, and look here at the means for a new life, free of labour, full of enjoyments and pleasures; collect your thoughts, and reflect with the greatest solicitude that you are capable of, upon the means and ways presented to you here, for the greatest human happiness imaginable, for yourselves, for the objects of your endearments, and for your posterity for ever.

Here is no idle fancy, no vain system presented to amuse you merely; no scheme for deceiving you, or for cheating you out of your money;—but only substantial means for your greatest happiness are here displayed before your eyes, in a fair, open, and honest way; no sacrifice, no trust, no risk is asked of you; nothing but the trouble to examine. If the author be in error—why, you will then soon discover it; but if he is right, then no endeavours, even of the greatest prater, will be able to disprove the exhibited truths.

"Why gives the author so great invaluable discove-

ries to the public—discoveries, which, if true, he might sell for millions?—Or is he so simple as not to know how to avail himself of his discoveries for his best profit?"

These are questions you probably will ask. I will answer them directly. It is because I want to sell these my productions at the highest price I can get for them, just as you do with yours in the market. Now, mere millions are too low a price for my discoveries. I want to sell them at a much higher rate; at the rate of seeing all my fellow-men, and myself with them, together, in the enjoyment of the greatest happiness that human life be capable of; because I see there is no danger in it, the world being large enough, and having means enough, for affording the greatest happiness that can be thought of, not only for myself and a few friends, but for all men on earth.

Well, if I cannot get this high price for these productions of mine, I shall then do, as you do with yours, when you cannot get your demand, sell them at a lower rate, that is, for mere money, perhaps to some other people or government, to whomsoever that will buy them; or even, if I cannot help it, if the public should turn deaf ears to me, perhaps to some cunning wealthy speculators, and let them do with them what they please.

To understand this, without troubling yourselves with reading first the whole book, I will give you a brief explanation on the subject.

I show here, that there are powers in nature sufficient to effect in one year more than hitherto all men on earth could do in many thousands of years; that

these powers may be applied to do all human labour; I show you the system of establishments for it; and finally, that the most profitable, shortest, and easiest way to put them into operation for such great purposes, is, to form *associations* in the manner pointed out, so as to enable the rich and the poor to participate fully in all the possible greatest benefits of these discoveries, by paying a share not greater than the price of a lottery ticket; not before, however, he is perfectly convinced of the truth of my assertions, and only into the hands of his own choice, not in mine; for I want to have no concern in the money affairs for the execution of the proposals; I engage myself only for communicating the contrivances as far as required.

THE AUTHOR.

PREFACE TO THE BRITISH EDITION.

The work, now for the first time presented to the British public, was originally published at Pittsburgh, in the United States, about three years ago, which will account for the calculations that occur in it being made in dollars, the common currency of that extensive country. What has been the effect of its publication in the United States, the publisher of the present edition has no means of accurately ascertaining; but a copy of the work having fallen into his hands, he judged it by far too important to remain unknown to the people of this country.

It has been calculated, that the present mechanical and chemical power of Great Britain and Ireland are equal to the productive power of six hundred millions of human beings; but hitherto this power has been directed so as to enrich the few, at the expense of the many. Great as this power is, however, the author of the following work shows most clearly, that it is nothing in comparison with those stupendous powers which yet exist in nature, and which man has nothing to do but immediately to render tributary to his wants and wishes, to secure to the whole human race the richest abundance of every thing that is desirable; and that this result may be speedily attained, is the ardent wish of the

BRITISH PUBLISHER.

INDEX.

First Part.

	Page
Introduction	1
The power of wind	6
The power of the tide	19
The power of the waves	26
Burning mirrors	33
The power of steam	36
General remarks on all these powers	45
Perpetual motions	48
Prospect and retrospect of the human condition in general	53
System of machineries and establishments for the application of these powers	60
Agriculture	61
Architecture	62
Flexible stuff	64
Objects attainable in general	66
Plan for the buildings of a community	69
New state of human life	78
Occupations in the new state of things	82
The earth can nourish 1000 times more men than now exist	96
Pecuniary profit of the new means	97
Constitution of an association proposed	103
General views on the subject	109
Address to the Americans in particular	115

Second Part. Page

Proposals, how to render the new means the most beneficial for the United States 121
Formation of a new state 141
First period..... 141
Second period 142
Third period 146
Fourth period..... 156
Appeal to the Americans 161
Comparative view on the condition of man at present, and that attainable by the new means ... 165
In physical respects 166
In moral respects 184
In intellectual respects 192
Conclusion of the Second Part 206
Petition to Congress on the subject..... 207
Letter to the President of the United States 215
Proposal of a pamphlet, the New World 215

FELLOW-MEN!

I promise to show the means for creating a paradise within ten years, where every thing desirable for human life may be had for every man in superabundance, without labour, without pay; where the whole face of nature is changed into the most beautiful form of which it be capable; where man may live in the most magnificent palaces, in all imaginable refinements of luxury, in the most delightful gardens; where he may accomplish, without his labour, in one year more than hitherto could be done in thousands of years; he may level mountains, sink valleys, create lakes, drain lakes and swamps, intersect every where the land with beautiful canals, with roads for transporting heavy loads of many thousand tons, and for travelling 1000 miles in twenty-four hours; he may cover the ocean with floating islands moveable in any desired direction with immense power and celerity, in perfect security and in all comforts and luxury, bearing gardens, palaces, with thousands of families, provided with rivulets of sweet water; he may explore the interior of the globe, travel from pole to pole in a fortnight; he may provide himself with means unheard of yet, for increasing his knowledge of the world, and so his intelligence; he may lead a life of continual happiness, of enjoyments unknown yet; he may free himself from almost all the

evils that afflict mankind, except death, and even put death far beyond the common period of human life, and, finally, render it less afflicting: mankind may thus live in, and enjoy a new world far superior to our present, and raise themselves to a far higher scale of beings.

It may appear very wonderful that none of these things, though they comprehend all the objects man may possibly desire in this world, ever existed yet, since thousands of years, and that they all should have originated from one single individual. But this wonder will greatly diminish, if not entirely cease, when it will be seen that these great promises are founded on facts well known, that any man of common sense, if he ever had bestowed full attention upon them, would have come, ultimately, to the same or similar results as I am about to show; and when it is considered that many contrivances of modern times have led to great comforts and advantages unknown to the ancients, though they had the same mental faculties of making them: they passed thousands of years in ignorance and errors, thinking always themselves to have reached the summit of human perfection. History teaches but too plainly, that the progress of human knowledges and intelligence was every where most tediously slow. Individuals who attempted sometimes to disperse new valuable truths, were not listened to, and considered insane in proportion their truths deviated from the common track of the unthinking or unreasoning multitude. Our present age is yet liable to the same great evil;—instances in proof of this are to be found in plenty; yet as it is superior to the preceding ages, it

is liable to this spiritual sloth in a less degree. After an attentive perusal of this work, after some calm reflection upon the subject, it will be found that the promised great ends are attainable to the full extent and meaning of the words, without any wonder, without any hidden power or secret of nature, but by a few most simple contrivances.

The basis of my proposals is, that there are powers in nature at the disposal of man, million times greater than all men on earth could effect, with their united exertions, by their nerves and sinews. If I can show that such a superabundance of power is at our disposal, what should be the objections against applying them to our benefit in the best manner we can think of?—If we have the requisite power for mechanical purposes, it is then but a matter of human contrivance to invent adapted tools or machines for application. Powers must pre-exist; they cannot be invented; they may be discovered; no mechanism can produce power; it would be as absurd to invent tools that work without any applied power to put them in operation; machineries, of whatever contrivance they be, are nothing but tools more or less combined. I think this remark not to be superfluous, because many men, even of talents in mechanics, have erroneously cherished the idea of inventing mechanisms working of themselves without given power, and have uselessly bestowed time and expenses on the invention of a perpetual motion.—I wish my proposals not to be precipitantly confounded with such vain schemes.

The chief objects of my statements are, therefore, the powers to be applied: the application of them is

but of secondary importance: this may be of an infinite variety: that of the greatest advantage is the most preferable. When you are once convinced that there is power enough at our disposal for the great purposes in view, then you have the proof that the attainment of the purposed ends is possible: the question is then not more: *whether* the promised things are attainable, but *how?*—

The powers are chiefly to be derived, 1, from wind; 2, from the tide, or the rise and fall of the ocean caused by the gravity between the moon and the ocean; and 3, from the sunshine, or the heat of the sun, by which water may be transformed into steam, whose expansive power is to operate upon machineries, though by a contrivance different from that actually in use.

The waves of the ocean are also powers to be applied, but as they are caused by wind, they are included in the power of wind. Each of these powers requires no consumption of materials, but nothing but the materials for the construction of the machineries.

I shall at first endeavour to show the magnitude of each of these powers in its full extent over the whole world, beginning with well-known facts; this will show the average power for any required extent of the surface of the globe. But as these powers are very irregular and subject to interruptions, the next object is to show how they may be converted into powers that operate continually and uniformly for ever until the machinery be worn out at length, or, in other words, into perpetual motions. After this it will be the problem, how to apply these perpetual motions of

nature to the attainment of the purposes in view? I shall give a general outline of the system of machineries for effecting all promised purposes. Next to this I shall state the objects attainable by these means, and the condition of men that must result from the accomplishment of such purposes. It will then appear from the nature of the subject, that the execution of the proposals is not qualified for single individuals; for as one machine is sufficient, under the superintendence of a few men, to supply many thousand families with all their wants, both natural and artificial ones, the consequence would be but hurtful to the labouring class, as the price of their labours would sink almost to nothing, dangers and violences would ensue, and the effects would be more destructive than beneficial, even to the undertakers themselves, until after a series of convulsions a different order of things should be established. It would be certainly a proper object for the Government to make the arrangement for the execution of these proposals; but as the Government of our nation is the organ of the people's will, the subject must first be popular; but it cannot become popular before it is generally known and understood. Therefore the execution of the proposals is only qualified for a large body of intelligent men, who associate themselves without limiting the number, time, and place, or country. I shall, therefore, finally propose a constitution for association. The larger this society, and the larger the means, the greater the advantages will be for every participating individual.

I shall now state:

1. THE POWER OF WIND.

That there is power in wind, requires no proof of me. The uses of it in navigation and windmills are too well known. My object is to state *how much* power there is in wind: I shall state it in the full extent, as far as it can be brought within the disposal of men over the whole surface of the globe.

To find a measure for a power, it is usual and proper to compare its effect with that a number of men or beasts are able to produce; viz. in observing how many men, horses, oxen, &c. are requisite for producing, within the same time, the same effect which a certain power produces. Thus it is said, e. g.: a steam-engine has twenty or fifty horses' power, when twenty or fifty horses would be requisite to produce the same effect.

When we compare a steam-boat running by the power of its engine, of which the quantity in horses' power is determinated, and a vessel sailing by the power of wind operating upon its sails, we may find a measure of the latter power. Suppose a steam-boat and a sailing vessel, both exactly of the same size, form, and burden, or draught of water, and running under equal circumstances with equal velocity. It is then evident that the power of wind operating upon the sails is equal to that of the steam-engine in the steam-boat. A vessel sailing before the wind will, by a good breeze, run at the rate of six to ten knots or sea miles per hour, i. e. seven to twelve land miles. A steam-boat running at the same rate in still water, with a load of 4 to 600 tons, will require an engine of about fifty horses' power. The supposed sailing vessel will, consequently, receive a power of wind of fifty horses. The

surface of its sails, together with its hull above water exposed to the wind, intersecting its course in a right angle by an imaginary profile through the greatest dimensions of vessel and sails, be about 5000 square feet; every 100 square feet will then receive one horse's power.

Long and many experiences with windmills prove this power to be, in an average through the whole year, a great deal stronger.

The Dutch have paid, since centuries, the greatest attention to the application of wind on windmills for various purposes. Holland being a flat, level country, affords no falls of water; and this nation was, therefore, compelled to have recourse to the application of wind on mills. Induced by a most extensive commerce in all parts of the globe, the Dutch nation applied this power for many economical and commercial purposes; and they have now in their little country many thousand windmills. Hence it is that Dutch windmills are taken for superior patterns by other nations.

The experiences with Dutch windmills show, that a mill with four wings, each thirty feet long and eight feet wide, operates, in an average, with a power of eight horses. The surface of each wing being, consequently, 240 square feet, all four wings expose to the wind a surface of 960 square feet, but in an oblique angle with the direction of the wind, which will hardly equal to the half of the same surface, or 480 square feet, when intersecting the wind's direction in a right angle: 480 square feet, receiving an average power of eight horses, and sixty being one-eighth of 480, the power of wind

on sixty square feet will, therefore, equal to one horse's power in an average. I shall, therefore, think myself free from exaggeration in taking, instead of sixty, one hundred square feet of surface, operated upon by wind in a right angle, as the average measure of this power for one horse. Moreover, it is to be borne in mind that heavy winds can either not fully or not at all be used both in sailing and on windmills; because they have to diminish the surfaces exposed to wind, or to take them away altogether for fear of breaking all to pieces; while I purpose to make use of the whole power of any wind. Wind is, however, not every where of the same average power. I do not mean with respect to altitude, for differences arising therefrom may be remedied as will be seen hereafter, but I mean in geographical respects. There are parts of the globe where calms and hardly perceptible breezes for the greatest part of the time are prevailing, while in others gales and strong winds are almost continually blowing. Within the tropical zone, and nearly thirty degrees of north and south latitude, as far as continents do not interfere, blows perpetually the trade wind. Thirty degrees north and south form a belt of sixty degrees around the globe, which is exactly the half of the whole surface of the globe, of which not one-fourth are continents. On the continents within the same zone are generally gales in one season and daily regular breezes in the other, succeeding each other. In mountainous regions and their vicinity is, from variation of temperature, almost continually a strong wind. In the other parts of the globe out of this belt there is generally a greater irregularity of

winds, but in the whole no less wind. We may observe it every day by the moving of the clouds, though we should not feel it on the ground on account of the obstructions there. The motions of the clouds are, as easily will be conceived, a great deal swifter, as the appearance shows: their distance or height is generally from a half to two miles. Imagine now you would see some object moving on the ground at such a known distance, with the same apparent celerity as the clouds, and you will have a conception of the swiftness of these motions. The obstructions on the ground that may hinder the usual applications of wind in many places, are no objects in my intended mode of applying this power.

As my object is to give an estimation of the power of wind as near to the truth as can be, it may not be superfluous to state my reasons in full for it, which requires a general view of the state of the atmosphere, as far as the knowledge of it, or aerology, teaches.

The atmosphere is an ocean of a thin, elastic, ponderable fluid, that surrounds the globe to the height of about fifty miles. It extends itself by increase of heat, and contracts itself by decrease of heat, more than any other body. Hence it is chiefly that every variation of temperature destroys the equilibrium of the atmosphere, by extending or contracting the same somewhere. The weight of this fluid tends immediately to restore the equilibrium, like we see on water, and causes thereby a current of air or wind. The variation of temperature depending from locality, from the time of day, from the time of seasons, from physical operations in nature, such as vapours, rains, &c., and

from many other known and unknown causes, the state or degree of heat is never and no-where always the same, and changes, more or less, continually. Besides the density or mass of the air of the atmosphere increases and decreases, and the weight of it, in consequence, varies, as we see by the barometer and other means. Unknown causes of a more universal nature may cause an impression or some influence upon some place or other in the atmosphere. When it happens that in some place an expansion of the atmosphere takes place, while in some other a contraction of the same exists, the current of air will run from the former to the latter place, if even many hundred miles distant from each other. When once the equilibrium is destroyed, it cannot establish itself immediately, but will effect first the surrounding vicinity, next gradually the more distant parts, and so on until some cause or counteraction stops or changes the notions, nearly in the same manner as when we see a stone or something else thrown into the water, where an undulation around the place will ensue, extending gradually further in larger and larger circles. Some difference, however, is to be noticed in the motions of air. It being perfectly elastic, it yields to the slightest impression, and extends, the next moment, towards that side where it finds the least resistance, to its full room which it occupied before. Hence the reaction of any motion in the atmosphere is of longer duration than in the water. Thus we see the atmosphere continually in a motion of the most irregular variation. Not only horizontally, but still more frequently up and down in oblique directions is the wind operating. Not

just parallel with the surface of the ground, but rather in undulations, though very irregular, moves the wind, as we may see easily by the direction of light bodies floating in the atmosphere, such as snow, smoke, feathers, &c.

In order to form an idea near the reality of nature, how much power of wind there may be at our disposal, we have to ascertain, by a deduction from experiences and observations, how large we may construct and expose surfaces to the effects of wind, and how close they may be brought together without intercepting the wind and diminishing its power materially. We know by experiences, that ships of the first rank carry sails 200 feet high. We may, therefore, equally on land oppose to the wind surfaces 200 feet high. Imagine a line of such surfaces 200 feet high, and a mile (or about 5000 feet) long; the same would then contain 1,000,000 square feet. Suppose this surface intersects the direction of the wind in a right angle, by some contrivances, and receives consequently the full power of the wind at all times. The average power of wind being equal to one horse's upon every 100 square feet, the total power this surface would receive, would then be equal to 1,000,000 divided by 100, or 10,000 horses' power. Allowing the power of one horse to be equal to that of ten men, the power of 10,000 horses is equal to 100,000 men's. But as men cannot uninterruptedly work, and want about half of the time for sleep and repose, the same power would be equal to 200,000 men's. Imagine such another surface just behind or before the former at one mile's distance, parallel to the first and in the same circumstances. This second surface would

then receive the same power of wind again as the first; for the distance being twenty-five times greater than their height, the one line could not intercept the wind from the other in any considerable degree, both lines would receive the full power of wind, as soon as the direction of it would deviate from the horizontal more than about two degrees. It may be easily observed, that the wind will generally strike the ground in a steeper direction, and therefore admit a closer approach of such parallel surfaces. That the wind strikes the ground obliquely is evident on the high sea. Else whence the disturbance and rise of the waves on it?—If the wind moved parallel to the ground, the surface of the sea could not be affected by it, and would remain smooth for ever. But such is never the case. The least breeze ruffles the surface of the water. And it is too well known, to what size and powerful effects the waves may be raised by wind. Moreover, experiences in navigation teach that vessels of the first rank sailing along a shore of about 200 feet high, trees, &c. included, at their wind-side, at a distance of one mile, will not suffer any considerable diminution of wind. If the supposed two surfaces will receive such a power of wind as stated, that is, each equal to 200,000 men's power, a third surface of the same height at the same distance, and parallel to the former under equal circumstances, will receive the same quantity of power; so a fourth, fifth, and so on, as far as may be chosen. The length of each such surface may, under the supposed circumstances, be prolonged as far as we please, the power of wind will be every where the same. Now, if we find the power of wind to be at the end of every

mile equal to 200,000 men's power, and so for every mile in breadth, it follows, that every one square mile affords such a power.—What an immense power?—The most populous countries in the world contain in an average from 100 to 200 individuals on every square mile, of which hardly one-half is able to work, or to be counted for full hands to work. But suppose even 100 full hands to work on one square mile, the power of wind within their places of habitation will be 2000 times greater. Yet this will not be the whole power of wind at their disposal. We are not limited to the height of 200 feet. We might extend, if required, the application of this power to the height of the clouds, by means of kites. If we extend it, for instance, to but 2000 feet high, we might increase the power ten times as much, that is, 20,000 times greater than the inhabitants of the most populous countries could effect with their nerves and sinews. Yet we will get a more proper conception of this power, in extending this comparison over the whole globe. The surface of the globe is about 200,000,000 square miles. According to the foregoing statement of 200,000 men's power for every one square mile, the whole extent of the wind's power over the globe amounts to about 200,000,000 times 200,000, i. e. to 40,000,000,000,000 men's power. The number of all human individuals on earth will not exceed 1000,000,000, of which hardly the half may be counted for full hands to work, that is, 500,000,000; consequently, the stated power of wind is 80,000 times greater than all men on earth could effect with their nerves, when the wind is used but to the height of 200 feet.

It may now be objected, that this computation includes the surface of the ocean and uninhabitable regions of the earth, where this power could not be applied for our purposes. But you will recollect, that I have promised to show the means for rendering the ocean as inhabitable as the most fruitful dry land; and I do not even exclude the polar regions.

It may be questioned, how surfaces 200 feet high may be exposed perpendicularly to wind for operation?—It may be done in the usual manner of windmills, but with great advantage in a different way contrived by me, so that every square mile may be surrounded by a continued line of surfaces or sails to the height of 200 feet, moveable around an axis, and occupying not one-tenth of the ground with all their machineries.

What a gigantic, awful power is this! 80,000 times greater than all men on earth could effect by the united exertions of their nerves!—at the least calculation. Suppose even one-half should be lost by friction of the machineries, or more, we need not economise with such an immensity of power, let but one-eighth of it be used, it would amount still to 10,000 times the power of all men on earth. If men were all and continually employed to work for useful purposes, they would effect a great deal more than we actually see, and might give to the world a far better appearance and a greater plenty of necessaries and comforts of human life. But if 10,000 times more can be done, if in one year, consequently, can be affected as much as hitherto in 10,000 years!—to what awful grandeur may not the human race exalt themselves?! The

greatest monuments and wonders known or left us to admire from our progenitors, which required many millions of hands, and many centuries to be finished, are nothing but childish, insignificant trifles, in comparison to the stupendous works that may be affected by these powers. Yet it is not the only power we have at our disposal. You may startle at this idea; you may ask again and again, can it be possible, that there is such a power for our use?—like I have done. Am I perhaps grossly mistaken in my statement? Is it perhaps nothing but a fancy?—a deception of my imagination? I have taken the most common experiences of sails and windmills for the basis of the statement. It is now for you to judge, whether the statement of these experiences are true or materially false. It will be an easy matter to decide this question. Ask the navigator, ask the wind-miller; or observe the power of wind yourself in any way you please. The results of your inquiries or observations may vary, they may show more or less power than I have stated; but suppose even the result to be but a small portion of what I have stated, we should still have an enormity of power. However I am confident a close investigation will show a far greater power than I have stated. If my statement of experiences is materially true, is there perhaps some gross mistake in my conclusions and computation?—This may easily be ascertained. If you find no material mistake in my present statement, is it possible for rational men to behold this power with indifference?—Does the subject not deserve our greatest attention and reflection?—You may ask, how is it that no application of great extent was ever made yet?

—In navigation we do make a considerable use of this power, and on land in some places by windmills. But it will occur now to your mind, that this power, on account of its irregularity, cannot always, nor any where, be applied. Here I have to repeat, it can. There is a material difference between the manner of application used hitherto and that which I propose. Hitherto the power of wind has been applied immediately upon the machinery for use, and they had to wait the chances of the wind's blowing; where the operation is stopped, as soon as the wind ceases to blow. But the manner, which I shall state hereafter, to apply this power, is to make it operate only for collecting or storing up the power in a manner, and then to take out of this store of power, at any time, as much power for final operation upon the machineries as may be wanted for the intended purposes. The power stored up is to react, just as it may suit the purposes, and may do so long after the original power of wind has ceased. And, though the wind should cease at intervals of many months, we may have by the same power an uniform perpetual motion in a very simple way.

If you ask, perhaps, why is this power not more used, if the statement be true?—I have to ask in return: why is the power of steam so lately come to application? So many millions of men boiled water every day since many thousands of years; they must have frequently seen, that boiling water in tightly closed pots or kettles will lift the cover or burst the vessel with great vehemence. The power of steam was, therefore, as commonly known, down to the least kitchen or washwoman, as the power of wind. But close observation

and reflection was bestowed neither on the one nor the other. It is by calm reflection, by linking the elements, or first and simple observations and ideas derived therefrom, together by little and little, that man is only capable to discover truths, which escape to immediate observations. It is thus often the case, that we arrive at truths which we never fancied or expected, beginning with the most simple truths known to every one, comprehensible even to little children, and which truths, therefore, would seem to be below the attention of mature men: man reasons from these first elements of his comprehension, he links them together into a chain, extends them further and further, applies them, and startles at last at the result: he mistrusts his judgment, suspects errors, goes back again to the most simple elements of conceptions, pursues again and again the course of his reasoning with the minutest attention, to discover errors, compares his theory with experiments, and sees finally compelled his reason to admit the discovered truth. Encouraged by the surprising result, he proceeds further with heightened curiosity. Thus mathematics took their origin, and in their consequences all sciences of certainty. Beginning with the most simple conceptions, which seem to the beginner to be the most insipid trifles unworthy his attention, he cannot see the reason why this minuteness of inquiry into these most simple things; he is led gradually into more complicated truths, and finally to astonishing results. He sees himself at last enabled to survey the universe without leaving his room; he discovers the size, form, and motion of the whole earth, the distance of the sun, moon, and stars,

their size, form, motions, and relations to each other; he ascertains that they are worlds, larger even than our earth, distant many millions of miles from us and from each other; he sees an universe of many millions of large worlds, whole systems of worlds; new ideas start in his mind, he sees no end in his discoveries. But tell to the man of equal faculties, but who is unacquainted with the train of close reasoning that led to those results,—tell him all these discoveries! talk to him about size and distances of the sun, moon, &c., where never any human being was, nor can go; tell these mathematical truths to him, whose mind is perhaps filled with erroneous notions and prejudices, of which he cannot give any rational account, which he never thought to examine. What will he answer?—He will deride the man of these knowledges, he will take him for a fool.—But when he sees that the same man predicts with precision eclipses of the sun and moon, &c., when he sees this supposed fool makes books and astronomical tables, to show, out of his room, to the navigator the means of finding his way through the vast ocean around the world, and many other strange things, of which he has not the most distant idea,—the poor man does not know what to think of it.—Truths like these are in our days generally acknowledged; but it is not long ago when they were not. And even now the reasons of these discoveries are by far not generally understood; the results are but by a part of the multitude *believed* on authority of the learned men. Many cases might be alleged, how the multitude have lived always in the grossest errors, prejudices, and ignorance, despising and deriding all at-

tempts of single individuals for discovering and applying usefully new truths.

I have announced to show the means for creating a paradise, a new superior world, to effect in one year more than hitherto could be done in thousands of years. People may ridicule the idea, or think the realization of such miraculous. But where is the wonder to effect these purposes, if we have powers enough and superabundant for it? If, e. g. you have to move a weight of one ton, and you know ten horses will effect it, but you have, instead of ten horses, 100;—where would be the wonder or the doubtfulness of being able to do it? Just so it is with my proposals. The removal of one ton by 100 horses, would certainly be less easy than to effect what I have promised by a power exceeding all imaginable wants. But you may ask now by what machineries can all the various purposes in view be affected in applying this power? Machineries are but tools. The possibility of contriving tools for any certain purpose cannot be questioned. They may be of various constructions for the same purposes. If we have sufficient power and materials for the tools to be applied, we may easily contrive and shape the tools as we please, and as they suit our purpose. There is no reason to deem the making of adapted tools for certain purposes impossible. I, for one, shall resolve this problem in a very simple manner for all announced purposes. I shall speak of that hereafter.

I come now to the statement of the second power: viz.

THE POWER OF THE TIDE.

The tide is a continual change of ebb and flow, or

rise and fall at every six and a quarter hours nearly, throughout the ocean, though not equal in all parts of it, nor at all times in the same parts. It varies from two feet near the equator, to sixty feet towards the poles.

To form a conception of the power which the tide affords, let us imagine a surface of 100 miles square, or 10,000 square miles somewhere in the ocean, where the tide rises and sinks, in an average, ten feet.—How many men would it require for emptying a basin of 10,000 square miles of area, and ten feet deep, filled with sea water in six and a quarter hours, and filling the same again in six and a quarter hours?—Whether this be caused by the gravity of the moon, or by labour of men, the effect and requisite power is the same.

Experience teaches, that a common labouring man may raise twenty pounds two feet at every second by continual labour. To empty a basin ten feet deep, the labourer would in the beginning have but little to raise, but he would have to raise the water higher and higher in proportion he would get nearer to the bottom of the vessel, till at the end of ten feet high. His labour would, therefore, be equal, by the best contrivance, to the raising of the content of the basin five feet high. If one man raises twenty pounds two feet at every second, he can raise the same five feet at every two seconds and a half, and one cubic foot of sea water in about eight or nine seconds, five feet; but for the sake of round numbers, say at every seven and a half seconds, or eight cubic feet at every minute, which would amount to 3000 cubic feet at every six and a quarter hours. Suppose a geographical mile to be about 6000 feet long, one square mile consequently

equal to thirty-six millions of square feet; and this area would, by a depth of ten feet, contain a mass of water of 360,000,000 cubic feet. Allowing 3000 cubic feet for every man, the raising of such a mass would require then 120,000 men.

To fill the same basin to the same height again in the next ensuing six and a quarter hours, would require again the same power; and so on continually. But as men cannot work continually during the whole twenty-four hours, but hardly one-half of the time, this work would require the double of that number for releasing each other. Hence a power to that effect of 240,000 men for one square mile. 10,000 square miles of the ocean would, therefore, require, for producing the effect of a tide of ten feet, at least 2400,000,000 men, which is nearly five times as many as there exists on earth. Suppose the United States to have a coast of 3000 miles, and this power to be applicable for but 100 miles distance from the coast in an average, which would be an area of 300,000 square miles, and, consequently, afford a power of thirty times 2400,000,000, or 72,000,000,000 men.

You will ask now: how is this power to be rendered applicable?

There have been made applications of this power, though very rarely and only by mere accident. When vessels run upon ground at the time of low water, they wait for high water, which will lift them up and make them afloat again; what else could not be done, except by unloading the vessel or raising it by a power equal to the weight of the vessel and cargo, with which it lies upon the ground. Thus, what sometimes would

require a power of several hundred tons, is effected by the tide. Suppose, for instance, a vessel, or ark, of 100 feet square, and sunk ten feet deep into water, just touching the ground at high water; the ensuing ebb to be ten feet. The vessel will then be entirely out of the water. Having been loaded with a weight so as to sink it ten feet deep into the water, its weight must equal to that of a mass of water 100 feet square, and ten feet high, which will be 100,000 cubic feet: suppose one cubic foot of water to weigh seventy pounds, the weight would be 7,000,000 pounds, which would be required to lift the vessel, and which the tide will effect of itself.

To give a clear idea how this power may be rendered applicable in a general way, I will state a simple contrivance for example. Imagine a chest or box one foot square and ten feet high, consequently ten cubic feet, fastened at one end of a balance, whose centre be supported or fastened by a chain, or in some other manner, either on shore, or at the bottom of the sea, and whose other end may bear a weight, or be connected with some machinery to be operated upon. The box be loaded with a weight just sufficient to sink it entirely into the water. Suppose further the other end of the balance be now fastened; the low water begin and sink gradually ten feet, immediately with this sinking the weight of the box begins to draw at the balance; but being made fast, it cannot yield, and the weight of the box increases in proportion the water sinks around it. At the end of the period, when the whole box is out of the water, the whole weight of it, i. e. of ten cubic feet of water, will draw at the balance.

When the balance is loosened, the box will thus lift at the other end a weight nearly equal to that of ten cubic feet of water. But as the box, by its sinking, will touch again the water, it will lose of its weight in proportion it sinks deeper into the water, till the whole weight at the balance will finally be annihilated when ten feet deep, and hence the effect will be but the half of the power raising uniformly ten cubic feet of water ten feet high. Now, at the period of the flow, the box will in the same manner be raised as was the weight at the other end of the balance before, and the latter end will be pressed down with a weight nearly equal to that of the box. Thus the balance may be kept moving up and down, like that of a steam-engine, only with that difference, that this motion would be slow, and at every six and a quarter hours but once, with a weight equal to that of ten cubic feet of water lifted five feet high, for one square foot of surface. But if we take, instead of a box of one square foot, a vessel of 100 feet square, i. e. 10,000 times as large, the power will be 10,000 times as great as the former. We may then easily remedy the slowness of the power, and give it any celerity by some contrivance or other, by a few wheels, or hydraulic press, by causing a stream through a narrow passage, &c. If required, we might either employ larger vessels or a number of smaller ones, operating one after another upon the same machinery. This power is applicable on sea, near to or at any distance from the shore, even in midst of the ocean, provided some part of the contrivance can be connected, either by support or by chains &c. anchored on the ground. As we do not

know yet the greatest depth of the ocean, it is not for me now to tell, how far the application of this power may be extended, though it may possibly be made co-extensive with the whole ocean, by means which the immense powers of nature afford. However, the application of the tide being by establishments fixed on the ground, it is natural to begin with them near the shores in shallow water, and upon sands which may be extended gradually farther into the sea. The shores of the continent, and of islands and the sands being generally surrounded by shallow water, not exceeding 50 to 100 fathoms in depth, for twenty to fifty till 100 miles and upwards, the coasts of North America, with its extensive sand-banks, islands, and rocks, may easily afford, for this purpose, a ground of about 3000 miles long, and in an average 100 miles broad, or 300,000 square miles, with a power of 240,000 men per square mile, as stated at ten feet's tide, of 72,000 millions of men, or for every mile of length of the coast a power of twenty-four millions of men. What an enormous power! And this power may be rendered highly beneficial for men, without occupying even any room on dry land. In what manner? it will be asked. To answer this question now, it will have the appearance of fairy tales; and reserving the answer, the statement of this gigantic power will appear useless. I will, therefore, give here some slight notice of its applications; though perhaps not one-thousandth part of it may be wanted at our time, yet it will serve to remove the narrow conceptions, prejudices, and all apprehension of having not enough means for any purpose that will come into question hereafter. We have

to accustom ourselves to conceive a state of things, that must and will be the consequence of the application of these means, quite different from what we are wont to see.

Rafts of any extent, fastened on the ground of the sea along the shore, stretching far into the sea, covered with fertile soil, bearing vegetables and trees of any description, the finest gardens equal to those the dry land may admit of, covered with buildings and machineries, which may operate not only on the sea, where they are, but which also, by means of mechanical connexions, extend their operations for many miles into the continent. Thus this power may cultivate the artificial soil for many miles upon the surface of the sea near the shores, and for several miles on the dry land along the shore, in the most superior manner imaginable: it may build cities along the shore, consisting of the most magnificent palaces, every one being surrounded by gardens and the most delightful sceneries; it may level the hills or unevennesses, or raise eminences along the shore, for enjoying open prospects into the country and upon the sea; it may cover the barren shore with fertile soil, and beautify the same in various manners; it may clear the sea from the shallows, and make easy the approach, not merely of vessels, but of large floating islands, which may come from and go to distant parts of the world, islands that have every commodity and security for their inhabitants as may afford the dry land. All such things, and many others, which may seem now to be but extravagant fancies, require nothing but the raw

materials for their construction, and these are to be found in plenty.

Thus may a power, derived from the gravity of the moon and the ocean, hitherto but the object of idle curiosity of the studious man, be made eminently subservient for creating the most delightful abodes along the coast, where men may enjoy in the same time all advantages of sea and dry land. The coasts may be hereafter continual paradisaical skirts between land and sea, every where crowded with the densest population. The shores, and the sea along them, will be no more as raw nature presents them now, but they will be every where of easy and charming access, not even molested by the roars of waves, shaped as it may suit the purposes of their inhabitants; the sea will be cleared of every obstruction of free passage every where; its productions in fishes, &c. will be gathered in large appropriated receptacles, to present them to the inhabitants of the shores and of the sea.

There is yet another power on sea of equal, if not of greater importance: it is the power of the waves, caused by the impression of the wind upon the surface of the water. Though this power is included in that of wind, and is therefore comprehended in the estimation of this power as stated; and though, generally, it cannot exceed the power of wind, being but a reaction of it, yet it may be rendered very useful in cases where no wind or much less power of the same exists. The sea, when once disturbed in its equilibrium, continues for several days in its motion after the wind has subsided, like a pendulum or a flying wheel when put in

motion. This motion of the sea is not confined to the place where the wind just blows, but it extends itself over the whole surface of the ocean until it meets with some resistance. We have an image, on a small scale, of this motion, when we drop a stone into a pond. We see then a circular ring arising round the spot where the stone dropped into it. This ring is again succeeded by another around it, this second by a third, and so on with larger and larger rings extending finally over the whole pond. The nature of this motion is thus explained:—The stone forces a mass of water out of its place, which is equal to the body of the stone; but the water all around it pressing with its weight against it, the removed water recedes in that direction where the resistance is the least, that is, right upwards, or perpendicularly to the surface. But here the water presses now with a greater weight, being risen higher than the next surrounding water. This again cannot yield immediately on account of the pressure of its surrounding water; so it must move in that direction where the resistance is the least, this is, perpendicularly up to the surface; forming, consequently, a ring. In the same manner, and for the same reason, this ring forms a second ring around it, and so every succeeding one. The formation of these rings affects the water not deeper than the rings themselves are high; for if it did, it would raise the water higher than it was itself, which is impossible. For the same reason the interval of any two rings next to each other cannot be larger than the rings themselves, and the basis of these must join each other; for if the intervals were larger, the rings would move water to the sides, where

it cannot recede on account of the greater resistance. Therefore, if, for instance, the rings be one inch high, they cannot affect the water deeper than one inch; and if their basis be two inches broad, the distance of the top of any two rings next to each other cannot be more than two inches. The sum of the room of the intervals must be equal to the sum of the room of the rings. If a body, a ball, for instance, of ten feet in diameter, be sunk with sufficient quickness into the water, it will raise a ring ten feet high; this a concentrical ring of the same height, then a third, &c., leaving always an interval of equal breadth, and affecting thus the water not deeper than ten feet. What here is done by the weight of the body, is effected in the same manner by the pressure of the wind in the formation of the waves; if the wind would give but one single blow upon still water, the effect would be exactly the same; but as it is blowing in a very irregular manner, dashing in many places at once and in succession upon the water, the waves caused by wind must move and rise very irregularly, following, however, the direction of the wind. But whatever the irregularity of these motions be, the laws of nature are always the same, that is, the waves cannot affect the water deeper than they are high, and the intervals cannot be larger than the waves themselves. Thus waves of from ten to twenty feet high will affect the water generally not deeper than from ten to twenty feet. This is confirmed too by the experiences of divers.

This motion being but near the surface, the application of this power requires no connexion with the

ground, but can be made operative by a certain contrivance of connecting the machinery with the lower depth of still water.

The motions of the water are swinging like a pendulum, and subject to the same law as the swinging of a pendulum, but counteracted in part by the pressure of the wind and of each other. Allowing in an average for each swinging of waves of ten feet four seconds, or fifteen in every minute, which will be slower than reality shows, we may form an idea of this power, in the same manner as for the tide's power is stated.

The computation shows, that a tide of ten feet affords for every square mile, or 6000 feet square, a power of 240,000 men at every six and a quarter hours' rise or fall. The waves caused by wind, supposed to rise or fall at every minute fifteen times, or at every six and a quarter hours, 5775 times, that is, about 6000 times as quick as the tide, the power would, consequently, be as many times great. But the waves of the wind leaving always intervals equal to the waves, the quantity of the waves is but the half of what the tide raises, and the power, therefore, amounts to 3000 times 240,000, or 720,000,000 of men's power. But covering the surface of the sea with any *large* square, it would obstruct the motions of the water, and be affected only along the wind-sides. The resistance which is to be opposed to the motions of the waves is, therefore, to be but linear, that is, by long and narrow bodies receiving the motions of the waves from one side. For instance, a vessel 200 feet long and 50 feet broad would be fully affected by such waves, as experiences show by ships of the first rank.

But be it only twenty-five feet broad, its area would be 5000 square feet. This is 1-7200th part of one square mile, calculated at 36,000,000 square feet. 720,000,000 of men's power, as the power for one square mile, divided by 7200, gives 100,000 men's power for the area of the supposed vessel, being a square 200 feet long and 50 feet broad. The size of such a vessel would not equal to that of a ship of the first rank. Vessels may sail at the rate of fifteen miles per hour. A ship of the first rank propelled solely by the power of steam, might require an engine of about 200 horses, for to run at the rate of seven miles and a half in the high sea, a usual rate. To run fifteen miles, would require then 800 horses' power; for theory and practice teach that the power is to be increased in the ratio of the square of the respective velocity. So a double velocity requires a quadruple power, and a treble velocity a power nine times as great. If we can apply a power of 100,000 men, or 10,000 horses, for propelling such a vessel, we may move it with a prodigious celerity. If we suppose but 64,000 men's power, or an engine of 3200 horses' power, as the half of the former, with continual effect, that is, four times as much as the power for the velocity at the rate of fifteen miles per hour, it would then have power for the rate of thirty miles per hour; this would amount in twenty-four hours to 720, and in four days to nearly 3000 miles, the distance of Europe from America.

We need not be surprised at the stated power, when we observe how ships from 1 to 2000 tons are borne up and down by waves, and tossed powerfully in every

direction within a few seconds. What power of men would it require to raise with the same swiftness such heavy weights? This will give us, at least, an impression of this power.

Though the waves are not always ten feet high, they are often twenty to thirty feet high, yet the sea is never quiet: huge masses of water are almost continually rising and falling, though there be no wind for many days. We observe an almost continual violent breaking of waves or surf along steep rocks.

Suppose the average height of waves to be half, or even one-third, of what is stated, there would still be power enough to cross the Atlantic Ocean in four to six days by this sole power, without any addition of that of wind or steam. What is true of one vessel is equally applicable to many hundreds when joined together, with this great advantage, however, that the foremost vessels, if closely joined in long rows following each other, or all in one piece, will only have to cut the water, while those behind have only to overcome a comparatively very small friction of the water along their sides. Thus ten vessels following each other closely joined as in one piece, may require but the double of the power of one, while they afford the means of ten times as great a power. Several rows may be joined together in front, and form thus a floating island. But such an island need not be composed of vessels; it may be constructed of solid logs of wood, which is specifically lighter than water, and which, therefore, can never sink, though they should be wrecked. Such an island, having the proper form,

may move at the rate of 1000 miles per day, and cross the ocean, to a certainty, in three or four days. The island may be covered with fertile soil in the highest cultivation, buildings, and every thing that men may want for their enjoyment and commodity. There will be no motion felt like on ships.

The same power will enable any single vessel or floating island to stand still at will under all circumstances, against wind and waves, without anchoring. This affords, thereby, means for telegraphical lines across the ocean from one continent to another, and to send intelligence over the same in less than one hour.

These are but hints, how many may rule over the ocean without any danger or any incommodity to himself, how he may convert the tremendous powers and motions of the sea to the most salutary effects and to the greatest gratifications of his desires and curiosity; how he may live and roam, in all imaginable enjoyments of life, in the most salubrious climates of the world; for it is known that the atmosphere upon the ocean is temperate and the most salubrious, even within the tropical zone; and how he may make thus, not some certain fixed spot of the earth, but the whole world, his delightful home.

May this idea be considered as a mere fancy or as something, that only a remote posterity may live to see? No, it is within our reach within less than ten years. The accomplishment of such purposes requires nothing but the raw materials for them, that is to say, iron, copper, wood, earth chiefly, and a union of men, whose eyes and understanding are not shut

up by preconceptions. It is, however, not meant here to begin with such projects, but to precede them with enterprises of closer interest.

I have now to state a third power, to be derived from sunshine.

When a common flat looking-glass is held towards the sun, so as to reflect its shine into an opposite shady place, it will be felt, or observed by the thermometer, that this reflected shine is warmer than the shade, and nearly as warm as the sunshine itself. When upon the same reflected sunshine another reflection from a second looking-glass is cast in the same manner, the spot of reflection will be still warmer; for the second looking-glass has the same effect as the first, and must, consequently, increase the heat on the spot where both reflections meet. When, then, a third looking-glass is directed again so as to cast its reflection of sunshine upon the same spot at the same time, the heat will increase still more. Thus, by a fourth, fifth, sixth, &c. looking-glass, the heat may be increased to any required or known degree; nothing else is required but a sufficient number of looking-glasses, or reflectors of any material, to produce any heat.

It is on this principle that artificial burning mirrors are constructed on a small scale. And it is on the same principle, that Archimedes, about 2000 years ago, contrived his burning mirrors, as history tells us.

The idea is very simple. There is no peculiar art or contrivance required. We need not just looking-glasses for these purposes: any thing with a polished surface answers the same purpose, be it of glass, metal, wood, stone, even straw, paper, linen, &c., pro-

vided it be polished or shining. There are many various means for rendering a surface shining, if it is not so by nature; varnishing, rubbing, pressing, &c. may effect it on various stuffs; in fact, any thing that makes a surface quite smooth, such as oil, water, any liquid material, that hardens or congeals, poured upon a surface; any hard material, stone, metal, wood, may be polished, and rendered fit for this purpose, by a proper friction. It is immaterial, too, of what size, form, or colour the pieces of such a mirror be; they are all to be of a flat surface. There is no curbature of their surface required like in the usual burning mirrors. All what is required for producing a focus, or burning spot, where all the reflections are concentrated, is to give to each flat piece of such mirrors its proper place and inclination towards the sun. This requires no laborious computation or preparation; but nothing more than an adapted contrivance for fixing every piece, and turning it until its reflection meets the destined spot. When once fixed, the whole contrivance is fixed for ever, and requires nothing more than its proper stand opposite the sun, which may be kept either by a machine, or by a man, in moving the mirror to the sun's motion for casting its concentrated reflection or focus always upon the same spot. The size of the burning mirror depends, from the degree of heat that is required, from the size of the focus, or burning spot, which again is depending from the size of the machinery upon which it is to operate, and, finally from the distance of the focus from the mirror. If, for instance, a focus of two feet square, that is, four square feet, were required, the burning

mirror might be constructed of pieces of flat mirrors of less than two feet square, considering that its reflection will increase in size by the distance of it. Suppose such a mirror consisting of 100 pieces one above another in a row, and 100 such rows alongside of each other, every single piece in its proper situation, the whole mirror would be less than 200 feet in diameter and have 100 times 100, or 10,000 flat mirrors. The heat in the focus would, consequently, be nearly 10,000 times as great as the reflection of one single piece, which would be a prodigious heat, and probably greater than any ever known. It is a fact of experiments, that small artificial burning mirrors may produce a greater heat than any fire in the hottest foundery. We shall not need such a heat for the purposes in view. A heat sufficient to boil water would do already; and for such a heat we need not one-hundredth part of what is stated; and a burning mirror of one-hundredth of the mentioned size, that is, from ten to twenty feet in diameter, might answer. However, we are under no limit for producing any quantity and degree of heat by this means.

The application of burning mirrors is, as will be already anticipated, for boiling water and producing thereby steam.

The advantages of this application are chiefly these; no material is consumed, consequently, no expenses and no labours for preparing and carrying the same to the spot of use are required; moreover, no labour for keeping the fire is requisite. The machinery may be contrived so, that it operates of itself, whenever the sun shines, without even as much as a superintendence

of men. All material that is required is water, and of that there is no want any where. I am alluding not only to the springs, rivers, and seas, but also to the water which is every where to be found under the ground, if wells are sunk sufficiently deep. So there is no exception in the application of burning mirrors for producing steam. But it will now be objected, that there is not always sunshine, that the nights and cloudy or foggy weather interrupt the effect.

To obviate such interruptions, there are two ways.

1. By enveloping the boilers with stuffs that keep the heat the longest in themselves; for instance, a thick coat of red-hot iron, or other hot metal, enveloped in a thick coat of clay, loam, sand, or other earthen material. We might thus continue a heat sufficient to boil water for many hours after the sun has ceased to shine, without consuming any material.

2. By contriving a reacting power, caused by the power of the steam, of which hereafter will be given the description, and by which many days, and even many months, the power of steam, caused by sunshine, may react at will, and thus be rendered perpetual, no matter how often or how long the sunshine may be interrupted

The interruption of sunshine, in this application, is therefore immaterial.

To form an estimation of this power, in its utmost possible extent, would exceed all bounds of our imagination; for the requisite stuffs for rendering this power operative are but water and sunshine, which are co-extensive with the whole world. The application of this power requires but the confining of

steam in cohesive solid material, which must not just be iron or other metals, though they are the most convenient; but stone, cast or moulded in a manner hereafter to be described, may answer the same purpose. We are, therefore, under no limit as to the materials for engines neither.

To conceive how, instead of iron or other metals, stone may be used, I will state here one of the most simple construction of a steam-engine on a larger scale than hitherto used.

Suppose a shaft, cylindrical or square (quadrilateral), of stone in one solid piece of sufficient thickness, sunk vertically into the earth; at the upper end closed by a strong cover of iron, or other metal, or stone, fortified by cross bars, a stone tightly fitted in the shaft, so as to be smoothly moveable up and down, connected by a piston or bar with the end of a balance; when this stone is near the upper end of the shaft, water pours into the interval between the stone and the cover of the shaft, which cover is to be heated immediately by being in the focus of the burning mirror; and converted into steam, the stone at the piston is now forced down the shaft by the expansion of the steam above it, and the air or steam underneath passes through a valve at the lower end of the shaft. When after this the stone moves up in the shaft, the steam above takes its vent through another valve at the upper end of the shaft. A second shaft of the same contrivance, whose piston is connected with the other end of the balance, alternates with the first in the same manner. Thus the water is alternately streaming in the one or the other interval between the moveable

stone at the piston in the shaft and its cover, at every motion of the balance.

There is this difference, in heating the water, from the common way, that here the focus of the burning mirror operates more powerfully than fire, and more uniformly, and by giving to the interval between the stone and cover, serving instead of a boiler, a proper shape, the water in it is to be heated momentaneously; this is effected by presenting a flat, extensive surface to the heat of the focus, and so much the smaller a depth of water. The details of such an engine need not here be described. By such a contrivance the full power of the hottest steam can be brought to application, by the least quantity of materials for the engine.

The power of steam may thus be rendered far greater than in the usual application.

There is no power ever so great for any mechanical purpose, that cannot be produced by steam. A short sketch of what experiments have proved, will show this.

The power of steam is generally compared to the pressure of the atmosphere, and this is taken for a measure. To understand the meaning of this expression, it is necessary to be acquainted with the elements of aerology. Some readers may not have directed their attention to this subject, and it may, therefore, not be superfluous here, to give briefly an idea of it, inasmuch as it relates to the statement I have in view.

The air that surrounds the earth, or atmosphere, is an ocean of a ponderable fluid, which, although very thin or light, yet, by its extensive height of many

miles, presses with its weight upon the surface of the earth, like water in a vessel, river, or sea, will do upon its bottom. We do not immediately feel or perceive this weight or pressure of the atmosphere, because it presses equally in the inside and on the outside of our own body, and so on every other body or matter. But as soon as we destroy the equilibrium of this pressure by any artificial means, we discover the effect of this pressure, or weight, and may measure it perfectly. When we, for instance, take a pipe thirty feet and upwards long, in a vertical position, closed at the lower end, and open at the upper end, fill it with water, and turn it, in a proper manner, upside down, that is, the closed end uppermost, the water in it will not fall out altogether through the lower end, but remain about thirty feet high in the pipe suspended, though the lower end is open, and whatever be the diameter or width of the pipe. The reason of this phenomenon is, that the atmosphere presses with an equal weight against the lower end of the pipe, while at the upper one the same is intercepted by the closure of the pipe; which appears to be true as soon as the upper end is opened when the water immediately rushes out of the pipe, the equilibrium being then restored at both ends of the pipe.

This experiment shows, in the same time, that the atmosphere presses upon the surface of the earth, and any thing that is thereupon, with a weight equal to that of an ocean of water about thirty feet high.

The air, being elastic, may be compressed into a smaller room, and will then always resist with an expansive power equal to that applied for its compression.

Thus, when air is compressed into a room half as large as it was before, its resistance will be twice as great as it was before; but being before counterbalanced by the pressure of the atmosphere, and therefore not perceptible, it will now in its compressed state show a resistance equal to that of the pressure of the atmosphere. When air is compressed into one-third, one-fourth, &c. of its former room, it will resist with a power of expansion three, four, &c. times that of the pressure of the atmosphere; and the expansive power would be called three, four, &c. atmospheres.

Steam is also elastic, and its expansive power, when confined, is thus measured and expressed by the number of atmospheres that would counterbalance it. To find the weight in pounds, which would counterbalance a certain power of steam, the weight of a water column about thirty feet high, with a basis equal to that on which the steam is to operate, is to be found, and this to be multiplied by the number of atmospheres, that equal to the power of steam. If, for instance, a steam power of 100 atmospheres is to operate upon a piston of one square foot of surface exposed to the steam, the pressure or power of the steam will equal to the weight of a water column having for its basis one square foot, and being thirty times 100, or 3000 feet high. Now, for the sake of round numbers, suppose a water column of thirty feet in height and one square foot for its basis, that is, thirty cubic feet of water to be equal to 20,000 pounds, the pressure of 100 atmospheres upon one square foot would be equal to 2000 times 100, or 200,000 pounds.

The expansive power of steam is not always the same, but increases uniformly with the increase of heat, when the quantity of applied water and the room of confinement remain the same.

Experiments have shown, that the pressure of steam is, by eighty degrees Reaumur, or the heat of boiling water, equal to one atmosphere, or about 2000 pounds on one square foot.

By 97 degr. R.	2 atmospheres.
108	3
116,5	4
124	5
130	6
135	7
140	8
148	10
270	100
300	150
370	309
400	400
440	547
460	631
500	820
680	2004
800	3080
1000	5316

The pressure on one square foot being about 2000 pounds for one atmosphere, the pressure at 1 000 degrees R. of 5316 atmospheres, is equal to 10,630,000 pounds on one square foot.

If there is no substance more, the expansive power

increases uniformly, at every degree R. of increased heat, with 0,0047 pressure of one atmosphere.

With burning mirrors we may produce any known degree of heat, without consuming any material. 1000 degrees R. is yet a moderate heat; there is, heat used in founderies and laboratories of 16,000 degrees R. and upwards. If 1000 degrees R. may produce a steam with a pressure of more than 5000 atmospheres, or upwards of 10,000,000 of pounds upon one square foot; and if we suppose the surface exposed to the immediate effect of steam of ten feet square, or 100 square feet, and the motion of the piston at the rate of but two feet at every second; we would have a power equal to a weight of 100 times 10,000,000 of pounds, or 1000 millions of pounds, moving or rising at the rate of two feet per second. Experience teaches that a common labourer is able, by steady work, to raise twenty pounds two feet per second; consequently, a power of 1000 millions of pounds, with the same rate of motion, is equal to 1,000,000,000 divided by 20, or 50,000,000 of men's power. If we allow but six hours' sunshine every day in an average, and twelve hours' time for work for men, that power would still equal to 25,000,000 of men's power. But this instance shows, that we are under no limit of power for any purpose we may conceive, and that this power requires comparatively but little room in its application.

You may perhaps startle at the idea of immense expenses and materials for such a powerful engine. But here I have to recall to your mind what I have stated already concerning the construction of steam-engines; namely, we need no metals and no other expensive

materials for the engines, though iron and other cohesive metals are most convenient. The pipes, or rooms of confinement for the steam, may be made of one solid stone, cast or moulded, and baked to a hardness and consistency equal to the best stone to be found, of any thickness that may be required, and sunk into the ground. The head of the piston may consist of the same material. The piston itself and the cover may preferably be of iron. The baking of such stones is an object of the sequel of my proposals.

However, there is iron in plenty over the whole world; nothing is more universally spread in nature than iron: almost all stuffs are more or less impregnated with iron. Places of several square miles are full of iron ore. And though we have not explored one-hundredth part of the surface of the earth in that respect, yet we have it at a cheapness little exceeding the expenses for labour in digging, preparing, and transporting it; and this price would be reduced soon to a trifle, could we save the human labour for procuring it, and substitute labour by powers that cost us nothing, as the case really is to be proved. We have as yet used but a very small portion of the immense store of iron that is discovered already in nature; and most probably, there is an uncomparatively greater store yet to be discovered. So there is no matter of doubt, that we are fully provided with this metal for all our possible mechanical purposes. But say, we be not for future times; then we may substitute this metal by other materials, as mentioned.

The power of steam is therefore subject to no limits, its requisites being sunshine, water, and solid stuffs for

confining and applying the steam, of which there is no limit, no materials being consumed.

The generating of steam-power is not the only use to be made of burning mirrors; they may be applied also to various other purposes of great importance, as I shall show hereafter.

Have I asserted too much, when promising to show that there are powers in nature million times greater than the whole human race is able to effect by their united efforts of nerves and sinews?

The power of steam and the power of wind may be applied over the whole globe, land and seas, either simultaneously or alternately, as found convenient. The three gigantic powers of steam, wind, and waves may be applied on the high sea, simultaneously, or one or two of them in the failure of others. The four powers of steam, wind, waves, and tide, are at once at our disposal along the coasts and upon shallows of the ocean; there will never be an entire stop of all at once. There are parts of the ocean where clouds and fogs with wind are, and other parts where a clear sky with calms are prevailing: in the former, we have wind and waves; in the latter, sunshine for burning mirrors at our disposal. In making use of one or the other power, just as chance affords, we are enabled to cross the ocean in any direction with floating islands, at the rate of 1000 miles per day, in all commodities and enjoyments, that may be found on land, without any danger. How to create rivulets of sweet and wholesome water on floating islands in the midst of the ocean, will be no riddle now. Sea-water changed into steam will distil into sweet water, leaving the

salt on the bottom. Thus the steam-engines on floating islands for their propulsion, and other mechanical purposes, will serve in the same time for distillery of sweet water, which, collected in basins, may be led through channels over the island, while, where required, it may be refrigerated by artificial means into cool water, surpassing in salubrity the best spring water, because nature hardly ever distils so purely water of itself, without some admixture of stuffs of less wholesome influence on the human body, as it may be done here artificially.

I have as yet stated but the chief and most universal powers in nature, that are playing before our eyes without any benefit for men hitherto; which are to be applied without consuming any material; they are derived, as has been seen, from the motions of the atmosphere, from sunshine, and from the motions of the sea, caused by the gravity of the moon or by wind. But these are not the only powers of nature that may be brought to our disposal; there are many others, though less universal and less important, which I shall at present not notice, as my object of showing that there is power enough, and superabundant for all purposes in view, is gained.

The statement can be made but in a general way, and no minutely-defined results can be expected in this new and universal matter, nor would it be of any utility. The question is not, whether the stated powers may be somewhat less or more than stated, but whether they are of such a gigantic magnitude as to afford a sufficiency for all our wants. If the statement of the powers had resulted in a bare sufficiency for the

grand purposes in view, it would be material to ascertain, if possible, whether there might not be some small error, some inaccuracy, or some exaggeration in the statement of experiments; but when it proves, by generally known facts, or well authenticated experiments, that there are, at the least estimation, thousand, and probably ten thousand times greater powers than we ever may possibly want, all doubts or apprehensions about insufficiency of powers must vanish for ever, and the mind be at ease on that account. It is for this purpose that I have endeavoured to state the whole extent of the powers to be applied for the great purposes in view. It is but owing to the narrow conceptions, to the inattention in respect to the things in nature, that may really be applied to the improvement of the human condition, to most deplorable prejudices in which we are generally trained up, and in which even the learned pass their lives, that proposals like mine may appear fabulous.

The studious, the reflecting mind will soon discover the connexions between the means and the effects to be produced thereby. But there will be also men, who are so ill favoured by nature, that they slovenly adhere to their accustomed narrow notions, without inquiring into the truth of new ideas, and will rather, in apology for their mental sloth, pride themselves in despising, disputing, and ridiculing whatever appears novel to them.

We have superabundance of power, powers without limits, million times greater than all men on earth could effect hitherto: this is proved: does it become to a rational man to continue looking with apathy and

dulness at them?—Has he not seen and learned enough of experiments in machineries in our days, to rouse his mind to be alive at the great advantages they may afford more and more?—Will, at the contemplation of those gigantic powers that cost nothing to men, no new light dawn in the mind?

Nature plays with these mighty powers before our eyes in the most irregular way. To apply them immediately upon machineries for certain final purposes, would subject the latter to great irregularities and interruptions. It is probably owing to this circumstance, that men have made so little application of them as yet. These inconveniences will be remedied in putting a medium between the powers and their final application, in order to convert them into uniform operations, or, in other words, into perpetual motions with uniform powers. As we have superabundant powers, irregular as they be, we may then create perpetual motions with *any power* that may be wanted, and any where.

To effect this purpose, we have to cause a re-action of the power of wind, steam, &c. An image of re-action gives us the weight of a clock being wound up. The sinking of this weight is the re-action of the winding it up. It is not just necessary to wait with winding up the weight till it is entirely sunk down; but it may be wound up at any time partly or totally; and if done always before the weight reaches the bottom, the clock will be going perpetually. In a similar, though not in the same way, we may cause a re-action on a large scale. We may raise, for instance, water by the immediate application of wind or steam, upon

some eminence into a pond, out of which the water may, through an outlet, fall upon some wheel or other contrivance for setting some machinery agoing. Thus we may store up water in some eminent pond, and take out of this store, at any time, as much water through the outlet as we want to employ, by which means the original power may re-act for many days after it has ceased.

To form a proper idea, how long and how great a power may be rendered re-active in this way, it will be necessary to specify some cases here.

Suppose an elevation of ground about 100 feet high above the adjacent ground. Let this elevation be 1000 feet square, and surrounded by a wall twenty feet high. Let, from one of the lower adjacent parts, water be raised, in the most convenient way, by men. From the experience that a common labourer can raise twenty pounds two feet high per second continually working, it follows, that he could raise twenty pounds in from fifty to sixty seconds, 100 to 120 feet high, that is, the height of the supposed elevation from the bottom to the top of the reservoir; this would nearly be one cubic foot of water raised in three minutes to the same height. He would, consequently, raise in twelve hours, or in a day, 240 cubic feet, and in 100 days 24,000 cubic feet of water. The supposed reservoir is capable of holding (being 1000 feet square and twenty deep), 20,000,000 cubic feet. To fill this reservoir in 100 days, would therefore require from 800 to 1000 men's labour. A power that would effect the same purpose in 100 days would then be equal to 100 men's power. It is evident, without further de-

monstration, that the water of the reservoir, by falling down again, would have the same power; for it would, by its fall, be able to raise the same quantity of water within the same time to the same height again, deducting, however, what may be lost meanwhile by its evaporation, which may be in general very inconsiderable. This reservoir would, consequently, be capable, by the fall of its water, of a re-acting power of 1000 men for 100 days, or of 10,000 men for ten days. A period of 100 days would exceed any continual calm; and therefore be far longer than might be wanted by the sole application of wind. A period of ten days would be more than sufficient for supplying continually the reservoir with water, by the application of sunshine and wind together. Such reservoirs of moderate elevation or size need not just be made artificially, but will be found made by nature very frequently, requiring but little aid for their completion. They require no regularity of form. Any valley surrounded by elevations, with some lower grounds in its vicinity, would answer the purpose. Small crevices may be filled up. Such places may be eligible for the beginning of enterprises of that kind; but thereafter, when the powers are rendered operative for the purposes in view, larger and more perfect contrivances may be made without expenses. Hills and mountains afford natural advantages for this purpose. The higher the reservoir the less room is required; for the more power with the same quantity of water will then be effected by the greater fall. But suppose even an entirely flat country. By the application of any of the stated powers, we may, for instance, excavate a

large hole of from 200 to 250 feet deep, and raise, with the stuff that is taken out of it, an elevation of 300 feet at its edge, so as to have then a height of from 500 to 550 feet. Suppose this elevation to be 2000 feet square, its water 100 feet deep, its fall in an average 400 feet; then its re-acting power may be brought to eighty times as great as that of the reservoir before stated; for its area will be four times, its depth five times, its fall four times, and consequently its re-acting power four times five times four times as great as the calculation in the first case shows. If then the former reservoir afforded a power of 10,000 men for ten days, this will be capable of eighty times 10,000, or 800,000 men's power for ten days. Water enough may be found at such a depth any where. But say it were not; then we may use, instead of water, sand, stones, earth, &c., which will have the advantage of not evaporating, and of being heavier, and therefore requiring less room for equal quantity of power, while these dry materials will cause somewhat more friction than water, which, however, will not counterbalance the advantages. The room in which this hole and the adjacent elevation occupies is not lost for cultivation of soil. Both surfaces may be covered with rafts decked with fertile earth and all kinds of vegetables, which may grow there as well as any where else.

The re-acting power is not required for all applications, but only for such which admit of no delay, as, for instance, cultivation of the soil in its proper season. In other cases, and in the most of the applications it is indifferent, at which time the machinery be operating,

or whether it operates continually or at intervals. In these cases the original powers of wind or steam, &c. may immediately be applied.

Thus the medium for rendering these powers perpetual, or operative at will at any time, may be chiefly confined to the cultivation of the soil.

However, if there were any occasion for rendering the re-acting power greater, on the same room, than exemplified, the contrivance might easily be extended to a larger scale. For instance, an elevation of 1000 feet above the bottom of the adjacent hole, and one square mile, or 5000 feet square, its water 400 feet deep, with a fall of from 600 to 1000 feet, or in an average of 800 feet, would afford for ten days a power —compared to a reservoir 1000 feet square, 100 feet high, and its water twenty feet deep, of 10,000 men's power—of twenty-five times twenty times eight, or 40,000,000 men's power, a power exceeding all possible wants on such a small room.

On the high sea, and along the coasts where more powers are concurring, and where hardly ever there is an entire cessation of all of them, there is little or no occasion for re-acting powers.

The raising of water or other heavy materials, as well as the falling of the same for this purpose, may be effected in various ways, which I need not detail here; localities must suggest the most proper mechanism, which, however, may be very simple in all cases. Common water-engines suggest already all what is here required. Both for the ascent and descent of the materials, if the height is very considerable, one roller at the top, and another at the bottom with a chain

around them, at which buckets may be fastened in a proper manner, is sufficient to effect the purpose. The contrivance for the ascent of the materials may operate whenever nature affords a chance, that is, whenever there is sunshine or wind; the contrivance for the descent may perpetually operate with uniform power upon some machinery which is to be connected with it. Both contrivances for ascent and descent may operate without any superintendence at all, except in cases where some alteration is to be effected.

Thus a power of many thousands or even of millions of men may perpetually continue its play until the machinery is worn out by length of time; and but one or a few men will be required to keep it in order, and direct its application.

In stating the magnitude and regulation of the chief inanimate powers of nature, I have stated the basis of my vast proposals. When we see powers at our disposal million times greater, at the lowest estimation, than all our united efforts of nerves and sinews could effect; when we see we have it in our power to render these powers perpetually and uniformly operative; can we behold this discovery with indifference? When the first elements of mechanics teach that there is no motion imaginable, that could not be produced by some adapted mechanism; provided we have the requisite power, can we, as rational men, think of these gigantic powers without inquiring, why they should not be applicable and not be applied for the benefit of men?—Can it appear to a rational man any longer strange, that with powers exceeding the human bodily strength by ten thousands and millions of

times, might be effected in one year more than men could do hitherto in thousands of years?—Can man with sound reasoning mind think it absurd, extravagant, to effect things, which he was not accustomed yet to see, by the application of such enormous powers, that have played idly hitherto?—Are these powers not sufficient to change the whole face of nature by a general application?—What should hinder us from making the best use of them that we can think of, when they cost nothing?—We know already, that, by a persevering industry for many centuries, a populous nation might change a barren forest into delightful gardens, intersected by canals for their culture, filled with mansions of splendour and ease, and provided with every comfort and enjoyment imaginable for human life. Where is the reason for supposing it impossible, to effect the same things, and more, by powers exceeding many thousand times all possible exertions of a whole nation for many centuries?—There is no reason at all in such thoughts; they are nothing but a blind adherence to customary impressions of minds little used to reflection. Such a stupid adherence to customs is the most baneful and most degrading evil of the human creature; for it approximates man to the state of brutes, by neglecting the most precious gift of his Maker, the reasoning faculty, the only one that may raise him above brutes. Brutes, too, follow the customs without reasoning. The domestic animals, for instance, sneak to their accustomed stables and pasture grounds, though it be for enslaving or butchering them. Man is but little above these brute, if he is but a slave to customs in

thinking and acting. He cannot claim even, with any pretence, indulgence, when he is so infatuated as to pride himself in this despicable mental sloth. This evil is not only to be found among the lower untutored classes, where it is more pardonable, but also among high-bred and high-standing gentlemen, whom I pray to be assured, that I wish not to add any thing to the grievous affliction under which they labour without their suspecting it; I wish merely to diminish its effects upon themselves and others, as a physician will do with the sick of contagious diseases; I will point out the symptoms of this affliction, as a warning that may be very useful to many; the symptoms are generally: the patient is very arrogant and very ready in his judgment without giving or taking any reason, he surmises instead of reasoning, he judges before he examines, and with all this insanity he self-pleasingly ridicules what he does not understand—beware of such a brute, you cannot reason with him.

If man ever forfeited the paradise by his sin, as we are told, it must have been the sin of neglecting the most precious gift of his Maker, that reasoning faculty, that only gives him the dominion over the brutes, and may give him also the dominion over the inanimate creation, and make thereby of the earth a paradise.

Man needs not to eat his bread in the sweat of his brow, and to pass his life in drudgery and misery, except he perseveres in his mental sloth, and foregoes the use of his reason.

We are trained up in the notion, that industry is a virtue and a necessity to man, and so it is truly—I do

not mean to apologise for, or to commend idleness and sloth—but it is so only relative to our present state of knowledges; for it is the only means to lead a decent life in society, to preserve us from suffering and want, to procure us comforts, and even respect among our neighbours. With the same reason the savage counts it for his two most exalted virtues, to slay many enemies and kill many beasts in his forest; they only tend to his self-preservation and to that of his family. The better cultivated man wants to have other virtues. Useless or needless drudgery and toil ceases to be a virtue; more exalted qualities step into their place, in a more refined and happier state of men. What virtue can there be in passing one's life like a prisoner in a treadmill? The occupations of men in our present state of advancement are yet not much better: they are either a monotonous drudgery, or some insipid occupation, which nothing but custom and necessity may render tolerable in some degree, but which are the very means to keep the mind in inactivity, and low, trivial pursuits. I will not expatiate on this disgusting subject, for fear of being too prolix; but look at the labourer of the field, at the mechanic in the shop, at any common occupation. How dull and tedious to pass the best part of one's life in the same ever-repeating mechanical motions or labours, and after they are ten thousand times repeated, they are ten thousand times again and again to be done over. What is the mighty object of leading such a life?—To get money, in order to buy what one wants. Is this the most exalted virtue, the highest destination of man's life that can be thought

of in this world?—It may be a virtue or a necessary evil in a state of general ignorance and prejudices, but it is no virtue founded in nature.

Where did sciences and mental culture and the refinements of human life flourish the most?—Not among people who passed their lives in drudgery. The Greeks deemed mechanical work a disgrace to a free citizen, and employed their slaves for that purpose. Hence their lofty sentiments, their high state of mental culture and refinements, superior to all their neighbours, even to the Romans. It is to these ancient Greeks that we owe chiefly our sciences of reason. Look at the same country now, at the descendants of the same Greeks, an ignorant, oppressed race of men! The sciences of their ancestors would have been lost also for us, if not classes, devoted to religion and dominion, who thought mechanical occupation below their dignity, had preserved, by their literary pursuits, the wrecks of those ancient superior acquirements; for the labouring classes, even of civilised Europe, never harboured sciences, philosophy, and refinements of human life; they had other pursuits, the bare necessaries of life, which left them neither time nor thought of higher pursuits; happy enough, when money could exempt them in part from labour, physical wants, and fear of want.

It is often questioned, whether the life of a savage in his wilderness may not be preferable to civilised life with its appending labours and comforts?—But it is obvious, that one savage cannot live on an area where 100 laborious civilised men may live in plenty. Therefore, the life of a savage ought by no means be

preferred. Man ought certainly be progressing, not retrograding, in improvements; and he will naturally be so, if not violently retarded or stopped in his course. We are actually in a progressing state, but only since a few centuries: men were fallen back into a state of greater barbarity before that period, as history proves. Ancient nations, several thousand years ago, in Asia and Africa, were further advanced in many knowledges than we are now; their ruins and monuments, left to us, show this. We have made improvements in an increasing progression in the latter time. This is quite natural; for knowledge begets knowledge, just as wealth begets wealth. There is, however, one fault in our system of education and public instruction up to the universities, which is an essential impediment in our mental and physical progress: this is, that the sciences of reason are less cultivated than those of memory and imagination. It is owing to this fault, handed down to us from an ancient state of barbarity, that people generally judge so very insane of any thing that appears new to them, they are not used to reflect much, to reason closely: the most useful knowledges of our days are either not at all, or but faintly come to their notice. There are but few individuals who are versed in the knowledges of useful things of our days. The science of mechanics is but in a state of infancy. It is true, improvements are made upon improvements, instigated by patents of the government; but they are made accidentally, or at haphazard. There is no general system of this science, mathematical as it is, which developes its principles in their full extent, and the outlines of

their application to which they lead. There is no idea of comparison between what is explored and what is yet to be explored in this science; no investigation of powers, and their applications for the benefit of man, in all their ramifications and extents; we are in a manner groping along in the dark, and wonder at every new invention and improvement in mechanics. People doubt, reject, and reason at random, with positiveness on every thing that is new to them, without understanding, without even troubling themselves with examining the matter. It is thus a hard task to inform and convince them of any thing that may not suit their superficial or erroneous notions. The ancient Greeks placed mathematics at the head of their education, and deemed it indispensable to a liberal education, more for teaching and accustoming the mind to good, sound, close reasoning, than even for the matter itself. But we are glad to have filled our memory with notions, without troubling ourselves much with reasoning about them; if we do it at all, we may do it in secret. Hence this contrariety of opinions, which prove but the state of errors we live in.

Did I assert too much? If I did, there would be no chance left to me for making such discoveries as I have related already, nor would the annunciation of them be gazed at as something out of all reason. Archimedes knew and used burning mirrors for destroying vessels of the enemy, 2000 years ago. The history of Greece has been taught in our school since centuries, and with it the story of burning mirrors, too, again and again; but the schoolmasters thought this

story fabulous, and their scholars believed it so, because they saw no such a thing practised before their eyes, while the first elements of optics taught it to them with mathematical demonstration.

The discovery of the mathematical law of the lever made the discoverer exclaim—"Give me but a point of support, and I can unhinge the world." And I say with no less exultation, and I wish I could speak with a voice of thunder, and electrify the dull to sensibility at the greatest and most joyful news that ever could sound into the human ear:—"*Let me but find a union of a few intelligent men who do not judge before they examine, and grant me their attention, and I can change the world into a most delightful paradise!*"

The law of the lever is known to be the fundament of mechanics, of which the effects may often, to the untutored, seem no less marvellous than my promised paradise. The fundament of my assertion are the immense powers of nature that I have shown to be at our disposal, and the simple system of their application that I am prepared to show. Both are mathematical truths, and both are no subjects of opinion, dispute, or uncertainty, as soon as they are understood: none but an ignorant or an idiot would dote against the former, and will dote against the latter mathematical truth.

What mechanisms, what machines are to be applied, will be the question now, granted that there is power enough.

I shall give here a general outline of the system of machineries and establishments to be pursued.

We drudge and toil in agriculture, in architecture, in navigation, in all workshops, and in manufactories

for making many useful and many useless things for human life, for supplying many various demands of necessaries, comforts, and luxuries of life, of fancy, and fashions. We little care about the real benefit the produces of our industry may afford to the buyer, provided we get pay for them, and *make money* by their sale. There is an endless variety of artificial productions of every kind, resulting from competition of the producers. I have promised contrivances for superseding *all* human labour. To imitate minutely all the infinite variety of produces of human industry by machineries, would be an endless, ungrateful, and foolish undertaking, though it might be possible. It would nearly require to invent for every little work of man a particular automaton. This is not my purpose. But the most simple contrivances I could think of, and as few as possible, for producing, not the customary articles of human industry; but all things that may either substitute or surpass the known necessaries, comforts, and luxuries of men, are my objects in view.

This problem is not so difficult as might be imagined at first. There was never any system in the productions of human labour, but they came into existence and fashion as chance directed men. Still less was there ever a thought exhibited to make a general science or system of providing for all artificial human wants. My object is to furnish, by an extremely simple system, all what may be desirable for human life, without taking for pattern any of the existing things of industry. By abstracting from all what is in existence and fashion, I am enabled to devise means, without any artificial machinery, for producing every

thing that man may want for his nourishment, dwelling, garments, furnitures, and articles of fancy and amusements.

But we have to relinquish entirely all our customary notions of human wants, and substitute them by others of a superior and more systematic order.

I shall begin with *agriculture.*

The first object is here to clear the ground from all spontaneous growth and stones.

1. A machine of large size is to move along, and while moving, to take the trees of all sizes with their roots out of the ground, to cut them in convenient pieces, to pile them up, and to take all stones out of the ground to any required depth.

2. A second machine is to follow, for taking up the piles of wood and stones, and transporting the same to the places of their destination; this machine may carry thousands of tons at once.

3. The wood removed to its places for final use, is then to be formed into planks, boards, beams, rails, pieces for fuel and for any other purpose, by a simple contrivance, from whence it is to be removed to the places where it be wanted; this is done by one machine, which may also cut stones of any size.

4. The first mentioned machine, with a little alteration, is then to level the ground perfectly, in planing it, filling the excavations or taking off the elevations of ground until all is level. If the hills or valleys are considerable, the same machine cuts terraces, winding around them up to the top in elegant shapes.

The same machine may make any excavation or elevation, cut canals, ditches, ponds of any size and

shape, raise dams, artificial level roads, walls and ramparts with ditches around fields as enclosures, with walks on their top, form walks and paths with elevated borders.

5. The same machine, with some other little alteration, is to give to the ground its final preparation for receiving the seed; it tills the ground, in tearing the soil up to any required depth, refining or mouldering the same, sifting all small roots and stones from it, and putting the seed into the ground in any way required.

6. The same machine may take good fertile ground from one place to some other, for covering, at any required depth, poor soil with fertile soil of the best mixture.

7. The same machine, with a little addition, may reap any kind of grain or vegetable, thrash the seed out in the same time, grind it to meal, or press it to oil, it may also cut or prepare any other vegetable for final use in the kitchen or bakery.

8. Another small machine may sink wells and mines to any required depth and in any direction, and take the contents of the same up to light, it may be in earth, rocks, swamps, or water.

Architecture.

Earth may be baked into bricks, or even to vitrified stone, by heat. Stones may be cemented together, so as to break to pieces before their cement yields; a proof that cement is then harder and more cohesive than the stones themselves. Sand and stones ground to dust may be turned into glass or vitrified substance of the greatest hardness and cohesion, by great heat.

Hence we may bake large masses of any size and form into stone and vitrified substance of the greatest duration, even for thousands of years, out of clayey earth or of stones ground to dust, by the application of burning mirrors. This is to be done in the open air without other preparation, than gathering the substance, grinding and mixing it with water and cement, moulding or casting it into adapted moulds, and bringing the focus of the burning mirrors of proper size upon the same.

Wood, cut and ground to dust, and then cemented by a liquor, may be also moulded into any shape and dried, so as to become a solid, consistent wooden substances that may be dyed with various colours, and polished.

Thus we may mould and bake any form of any size, entire walls, floors, ceilings, roofs, doors, channels for canals, ditches, aqueducts, bridges, pavement of walks and roads, chimneys, hollow cylinders for machineries and mines and wells, plates for any purpose, vessels for holding dry and liquid materials, pillars, columns, balustrades, statues, postaments, and other ornaments, figures of any description, reliefs, sculptural works, pipes, furnitures for household, kitchen utensils, pieces of machineries, and numberless other things, of all shapes, sizes, colours, fashions, and fancy; inshort, any thing of hard material. When once the mould is made, it may serve for ever for thousands of thousands of other pieces, no matter how artificially it be shaped, without ever requiring any further labour of man. The substance may be polished or glazed, and then serve for burning mirrors.

Founderies of any description are to be heated by burning mirrors, and require no labour, except the making of the first moulds, and the superintendence for gathering the metal and taking the finished articles away.

Flexible Stuff.

There is one yet great desideratum; this is the making of flexible or pliable stuffs, and finishing all the articles out of them for use, such as for garments, couches, and all other commodities and ornaments, without labour. If this can be effected without labour, then the problem of superseding all human labours is resolved completely.

This can be done, without spinning, weaving, sewing, tanning, &c., by a simple proceeding. There are cohesive substances in superabundance in nature, in the vegetable and animal kingdom, which need but be extracted; they are of various qualities: some resist water, some heat, some both, some are elastic, some soft, some hard. They all may be hardened or dissolved into fluids, just as required. They are made use of already for various purposes. In dissolving them into adapted fluids, and mixing the same with fibres of vegetables of convenient fineness or other flexible stuffs fitly prepared, they will glutinate them together. By a proper contrivance sheets of any size and form may be formed, in a similar manner as it is done with manufacturing paper. This stuff may be made as fine, and as thin or as thick as it may be desired. It may be made of any degree of stiffness or softness, which is depending from the mixture of

stuffs, and from the manner of preparation and finishing. It may be calendered and polished for the sake of ornament, or for mirrors. It may be made of any colour, or pattern, without any additional trouble, except admixture of dying stuff. It may then be used for any purpose, instead of any woven stuff, of leather, paper, fur, &c. It may be cast not only in sheets of any size or form, but also into any shape whatever; thus ready-made clothes of any fashion, vessels for holding dry or liquid materials, of any shape or size, any other article of commodity may be at once cast or moulded into the appropriated form or mould.

So there will be no sewing or any kind of finishing by hands. There is no object of pliable stuff to be thought of, which could not be made completely in this way, so as to supersede all articles of that kind actually in use.

Such are all the means for the application of the immense powers of nature for substituting all human labours that I have in contemplation. They are simple, of a very small number in kinds, hardly three or four different contrivances. So they are by no means of such a nature as to scare the imagination from attempting the practice of them. They resolve completely the whole riddle of doing away all human labour, and make extremely easy and simple what was ever thought to be utter impossibility. But they do not only substitute all our present articles of human industry, but may create a great many things, which were never seen or thought of yet, to the greatest benefit of mankind. They are sufficient to create a paradise surpassing in splendour, delight, and enjoy-

ments all what human fancy ever conceived, a world altogether new for men, and this in a very short period.

Let us cast a view upon the things that immediately may be created by these means.

Any wilderness, even the most hideous and the most sterile, may be converted into the most fertile and delightful gardens. The most dismal swamps may be cleared of all their spontaneous growth, filled up, and levelled, intersected with canals, ditches, and aqueducts for draining them entirely. The soil, if required, may be meliorated, by covering or mixing it with rich soil taken from distant places. The same is to be mouldered to fine dust, levelled, sifted from all roots, weeds, and stones, and sowed and planted in the most beautiful order and symmetry, with fruit trees and vegetables of every kind that may stand the climate. The walks and roads are to be paved with hard, vitrified large plates, so as to be always clean from all dirt at any weather or season. They may be bordered with the most beautiful beds of flowers, fruitful vegetables, bushes, shrubs, and trees, all rising gradually in rows behind one another, arranged so as to afford almost continually delight to the organs of sight, taste, and smell. Canals and aqueducts with vitrified channels, and, if required, covered, filled with the clearest water out of fountains from the deep subterraneous recesses of water, which may spout and be led any where. Some canals may serve for fish-ponds, and for irrigating the gardens; others for draining swampy ground. Some aqueducts may be used to lead water into all parts of the garden,

for irrigating the ground whenever it be required; this may be done by sprinkling the water in copious showers through moveable tubes with adapted large mouths. This water may be mixed with liquid manure, derived from all the decayed vegetables, and other materials fit for manure, prepared and liquefied in proper buildings to that effect. Thus the fertility of the garden will not depend from weather. When it rains too much, it may be led off from the ground in proper channels. The canals may be bordered with beautiful growth in similar manner as the walks. The channels being of vitrified substance, the water being perfectly clear, and filtrated or distilled if required, they may afford the most beautiful sceneries imaginable, while a variety of fishes is seen clear down to the bottom playing about; and while these canals afford in the same time the chance for gliding smoothly along and between these various sceneries of art and nature, upon beautiful gondolas, and while their surface and borders may be covered with fine land and aquatic birds. The canals may end or concentrate in large beautiful ponds, where the bottom is also of vitrified substance. Thus water, clear as crystal in beds or channels like crystal, surrounded and covered by enchanting sceneries, fertilises and beautifies the gardens, and gives them the relief of a paradise. The aqueducts may be supported by the most splendid colonnades. The walks may be covered with porticos adorned with magnificent columns, statues, and sculptural works, all of vitrified substance, lasting for ever, while the beauties of nature around heighten the magnificence and

deliciousness. The ponds may also be surrounded by porticos. These porticos, the fountains, the green arbours and bowers may preserve continually freshness of air and of growth of the vegetables, and afford delightful shelter against wet weather and heat.

The crops are gathered and prepared for use without any labour. There is nothing then but enjoyment and delight. Pastures may be out of such gardens, with establishments for milking and butchering, so that one or two men may do this work in less than an hour every day for thousands of consumers.

The hills and mountains may be surrounded by the most beautiful terraces imaginable, which may wind in spiral form up to their tops, affording the grandest and most beautiful prospects, as well from below in the valleys, as from above down into the same.

This is what concerns agriculture, when I have supposed the most unfavourable spot to be found upon earth.

The dwellings ought to be also very different from what is known in that kind, if the full benefit of our means is to be enjoyed. They are to be of a structure for which we have no names yet. They are to be neither palaces, nor temples, nor cities, but a combination of all, superior to whatever is known.

It will be easily conceived, that the superintendence of machineries and establishments requires no more men, when operating for, and supplying a whole community of thousands of families with every thing they may want, than it would for each single family separately. It would be as improper to apply such mighty

means for every family in particular, as it would be to provide every spinster, instead of her spinning-wheel, with a large carding and spinning machine of many thousand spindles. It is, however, not understood here, to make it a matter of necessity or compulsion, to live and use the benefits of these means together in communities. Every one may have liberty as much as he pleases, to join or live by himself, and still partake of a large share of the common benefits to be derived from the application of these means. Yet it will be soon found and perfectly understood by every one, that it is of his greatest advantage, and but conducive to the greatest sum of his happiness, if he joins to a community of such a kind. So it may be first considered what may be done in, and for a whole community living together in all the enjoyments these means afford, and then this life be compared to a separate one.

There is no limit to confine us in the use of our means, and neither sacrifice nor loss of time requisite for giving full application to these means. Therefore, it is neither an idle dream nor useless vanity, to draw the picture in full of what is easily attainable for us; nor forms it any part of wisdom to refuse to us, or to those who are endeared to us, and in general to our fellow-men, any thing that may increase our happiness and that of other men, while it is but beneficial in all its consequences for future times.

The object of forming a community is, to afford to every member the possible greatest sum of enjoyments,

comforts, and pleasures, by the possible least attendance of men.

To obtain these ends, a system of building is to be contrived for lodging thousands of families together, without causing inconvenience to any of the inhabitants, and with every thing for their enjoyment within their reach at any time, without trouble, while it is put into every one's power to afford or to receive any social pleasure of refined society.

I shall merely draw the outlines of a plan here for attaining these great ends, leaving it to the option of others to finish the sketch at their pleasure.

Every adult member of either sex is to have an apartment for exclusive use, consisting of several rooms, such as for sleeping, bathing, dressing, and parlour. Children may be lodged under special care and instruction of certain appointed persons separately; but may also lodge with their parents, if desired. Every such private apartment communicates with the interior by a door to a spacious corridor, and with the outside of the building by a door to a gallery around the whole building, from thence to a flat roof of the building. Through every private apartment pass pipes for affording at all times cold and warm water by turning a crank, others for gaslight, for meliorating the air, for balsamic scents, for tempering the air in rendering it cooler or warmer, just as the inmate desires, for moving into the apartment, or removing out of it any thing at the inmate's desire. The victuals may, in this manner, be had separately. The apartment of every adult may ex-

tend across the building, being then divided by the corridor into two parts. Suppose every adult occupies thus twenty-five feet in length on both sides of the edifice, and every apartment be subdivided into three or four rooms; and suppose the width of the edifice to be 100 feet, the corridor twenty, the apartments on both sides forty feet wide, so that every person has two spaces, each about twenty-four feet long and forty feet wide, for exclusive use. Suppose such an edifice to be 1000 feet long and 100 feet wide, it could then lodge, in this manner, forty persons. Suppose further, the edifice to be of ten stories, each twenty feet high, and consequently the whole edifice 200 feet high, which would have then 400 such private apartments. Four such edifices joined together in right angles, so as to form a square of 1000 feet between them, could, in the above described manner, lodge 1600 persons, leaving yet at each of the four corners a square of 100 feet, which, in the ten stories, contain forty rooms each of 100 feet square: these may be used for dormitories of children.

The inhabitants may ascend and descend, in the inside, that is, in the corridors, by commodious stairs; and at both outsides, from the galleries that surround the whole edifice at every story, both inside of the square and outside; they may ascend and descend in boxes, which are moveable up and down, without exertion or trouble.

The square between these four edifices may be intersected by four walls in one direction and four in the other, so as to intersect each other in right angles, and

form twenty-five squares, each of nearly 200 feet square. Each of these squares may receive its light from above through large glasses, or a cupola full of large windows. These cupolas may, each by a number of properly placed large reflectors, reverberate the day-light through the glasses, and so augment the light inside, which again is to be received and reverberated by shining walls or large mirrors, so as to disperse the light in the most proper manner every where in the inside.

All the walls, of the outside and of the partitions, need but to consist of colonnades, the intervals of their columns forming doors and large mirrors. Some of the twenty-five squares may, in the same manner, be subdivided into smaller ones. These larger and smaller squares are to form halls for various purposes, such as fordining, reading, conversation, instruction, of children and of adults; for amusements; for general meetings, such as for public discourses, concerts, theatrical scenes, balls, &c.; one for the kitchen department, and for stores of prepared and unprepared victuals; the former stores are to be subdivided into chambers and moveable boxes. Every such box is to contain one portion of one kind of victuals for one meal of the community. It may be moved, by a slight motion of the hand, into the kitchen, where it empties itself into the vessel ready for reception and final preparation in cooking or baking. One or two persons are sufficient to direct the kitchen business. They have nothing else to do than to superintend the cookery, and to watch the time of the victuals being done, and then to remove them with the table and vessels into

the dining hall, or to the respective private apartments, by a slight motion of the hand at some crank. From thence are thereafter the remaining victuals to be removed into the store of prepared victuals.

The cleaning of the vessels and all washing of utensils, floors &c., is to be done by streaming water; the washing of other stuffs by steam. All this requires no work, but is done by slightly moving some crank. Any extraordinary desire of any person may be satisfied by going to the place where the thing is to be had; and any thing that requires a particular preparation in cooking or baking may be done by the person who desires it.

Thus there is no occasion for any work, except the superintendence of the kitchen department and some other machinery, which requires from one to three persons in all for the whole community. If done by turns, every adult member would hardly have one turn for one day's superintendence in the whole year. But it would probably be done voluntarily by the greatest part, without waiting for their turn; it being but an amusement, and no tedious occupation or labour.

The policy would be a matter of special arrangement of the community.

These outlines of the purposes of the edifice, and the materials, means, and powers that are at our disposal, give the ideas of the architecture to be adopted. I repeat it, it is not for a vain show and mere idle pomp, that I am drawing a fanciful picture; but a perfect harmony of means and wants must dictate all the contrivances to be made; and it is this intended

harmony that induces me to give a full sketch of the objects within our reach.

The system of the building is to be adapted to give the most convenient lodgings, with the greatest comforts and enjoyments by the least trouble, to the greatest sum of individuals in the smallest space These purposes seem to be attainable in the greatest perfection possible by the system as mentioned. A space of about 1200 feet square, or nearly one sixteenth part of a square mile, may contain, inclusive, children, 3,000 to 4,000 individuals, with the following conveniences:—

Each adult member has, out of his apartment, a free view into the environs around the habitation, and an immediate communication with the halls in the inside of the square. He may walk, inside or outside of the square, upon the galleries that surround every story. He may ascend to any story above his, or to the flat roof of the whole square, or descend to any gallery below his story, or to the ground, in a box, without trouble, easy and quick, both inside and outside of the square. He may thus move without exertion, in a few seconds, to any part of the square, inside and outside, every individual having a box inside and another one outside for his own use, fixed in a proper manner at the galleries by his apartment. He may procure to himself all common articles of his daily wants, by a short turn of some crank, without leaving his apartment. He may at any time bathe himself in cold or warm water, or in steam, or in some artificially prepared liquor for invigorating health. He may at any

time give to the air in his apartment that temparature that suits his feeling best. He may cause at any time an agreeable scent of various kinds. He may at any time meliorate his breathing air, this main vehicle of vital power. The science of chemistry, in our days, teaches this to be done in a high degree. Man is depending, physically and morally, from the things that surround him, and chiefly from the temperature and the qualities of the air he breathes and absorbs through his pores. Impure and and inferior air is more hurtful to health and temper than bad water; the difference is only, that the bad qualities and impurities of water are partly seen and tasted, while those of the air are invisible. Nobody would like to drink out of a stinking pool; still the invisible air, which is continually inhaled and immediately transformed into component parts of our own body and life, is of far greater importance for life; so much, at least, that the same human individual, with the same food and habits, may in one kind of air live with a decaying health, pale and sallow face, general debility, digestion and all other vital functions enfeebled, susceptible of various diseases, till finally premature death or accelerated decrepitude concludes his existence: while in another kind of air he may enjoy a vigorous health, a cheerful temper, possess a blooming countenance, and the best energies of all vital functions, and thus reach an age far beyond the common period of human life; yet the difference of air would be neither seen nor smelt. Therefore, by a proper application of the physical knowledges of our days, man may be kept in a perpetual serenity of mind, and, if there is no incurable

disease or defect in his organism, in constant vigour of health, and thus his life be prolonged beyond any known period of human life of our present time.

The edifice is to be provided with large ice-cellars, sufficient to furnish at all times the inmates with cool streams of air or water through every private apartment, as well as through the halls. There is also a heating apparatus for procuring warm air or water wherever it be desired.

All this is to be effected, not by a complicated machinery, but in the most simple way.

The character of architecture is to be quite different from what it ever has been hitherto. There are vehicles to be used for moving several thousand tons at once, and putting them into their destined place. Hence large solid masses are to be baked or cast in one piece, ready shaped in any form that may be desired. The building may therefore consist in columns 200 feet high and upwards, of proportionate thickness, and of one entire piece of vitrified substance. These columns may form colonnades both for surrounding the whole square and dividing and subdividing it into all the required larger and smaller squares, for the private apartments, the halls and their subdivisions. The floors and ceilings of each such square may be of one entire piece of the same or similar vitrified substance. The intervals of the columns along them are to form the doors, windows, mirrors, pictures, &c., for the partitions and outside walls. All these huge pieces are to be moulded so as to join and hook into each other firmly, by proper joints or folds, and not to yield in any without breaking.

Thus a system of building, indestructible for many thousands of years, consisting of but entire columns and plates of hard vitrified substance, is to be erected in a most simple way, without expense or labour, with but little time, after the first simple tools are made. And what difference between this system of building and the most magnificient palaces and temples that ever were known!

The substance may be died with various beautiful colours. So the colonnades with the reliefs, bas-reliefs, pictures and sculptures, copied in a mechanical way, and ornaments of every kind, on and between the columns, may all radiate with crystal-like brilliancy of the most beautiful and indestructible colours—all this reflected and multiplied by mirrors and reflectors of various kinds.

All parts of the edifice may be furnished with beautiful carpets and couches along the walls, which in the halls may rise amphitheatrically behind one another, moveable seats and tables, and every thing that may afford convenience or please the fancy.

The twenty-five halls in the inside of the square, each 200 feet square and high; the forty corridors, each 1,100 feet long and twenty feet wide; the eighty galleries, each from 1,000 to 1,250 feet long; about 7,000 private rooms; the whole surrounded and intersected by the grandest and most splendid colonnades imaginable; floors, ceilings, columns with their various beautiful and fanciful intervals, all shining, and reflecting to infinity all objects and persons, with splendid lustre of all beautiful colours and fanciful shapes and pictures; every where the most elegant

couches, seats, tables, &c ; all galleries, outside and within the halls, provided with many thousand commodious and most elegant vehicles, in which persons may move up and down, like birds, in perfect security, and without exertion; the elegant galleries with beautiful balustrades and various ornaments; the flat roof of the whole square, 1,250 feet square, with its twenty-five cupolas, each upwards of 100 feet in diameter, with mazes of pleasant galleries, turrets, places for various purposes, vaulted alleys, pavilions, and many various ornaments and commodities: at night the roof, and the inside and outside of the whole square are illuminated by gas-light, which, in the mazes of many coloured crystal, like colonades and vaultings and reflectors, is reverberated with a brilliancy that gives to the whole a lustre of precious stones as far as the eye can see—such are the future abodes of men!—

The environs of this residence are no less beautiful. The building is to be erected on an elevated spot, artificially made, if not formed by nature already, with a commanding view, upon an extensive landscape, of the most fanciful and varied beauties of nature and art, with all the luxuriancy and variety of growth that such a superior culture of soil and a fine climate afford. —And why pass a dreary winter every year, while there is yet room enough on the globe where nature is blessed with a perpetual summer, and with a far greater variety and luxuriancy of vegetation?—More than one half of the surface of the globe has no winter. Men will have it in their power to remove and prevent all bad influences of climate, and to enjoy perpetually only that temperature which suits their

constitution and feelings best. There will be afforded the most enrapturing views to be fancied, out of the private apartments, from the galleries, from the roof, from its turrets and cupolas—gardens as far as the eye can see, full of fruits and flowers arranged in the most beautiful order, with walks, colonades, aqueducts, canals, ponds, plains, amphitheatres, terraces, fountains, sculptural works, pavilions, gondolas, places for public amusements, &c,. &c., delight the eyes and fancy, the taste and smell.

The night affords no less delight to fancy and feelings. An infinite variety of grand, beautiful, and fanciful objects and sceneries, radiating with crystaline brilliancy of all colours every where inside and outside of the square, by the illumination of gas-light; the human figures themselves, arrayed in the most beautiful pomp that fancy may suggest and the eye may delight, shining, even with brilliancy of stuff and diamond, like stones of various colours, elegantly shaped and arranged around the body; all reflected thousandfold in huge mirrors and reflectors of various forms; theatrical scenes of a grandeur and magnificence and enrapturing illusions unknown yet, in which any person may be either a spectator or actor: the speech and the songs reverberating with increased sound rendered more sonorous and harmonious than by nature, by vaultings that are moveable into any shape at any time; the sweetest and most impressive harmony of music, produced by song and instruments partly not known yet, may thrill through the nerves, and vary with other amusements and delights.

Such is the life reserved to true intelligence, but

withheld from ignorance, prejudice, and stupid adherence to custom.

And what is all the material for so enchanting and unheard of abodes, sceneries, ornaments, dress, comforts, luxuries, delights? Nothing but the most common, the most neglected stuff in nature, earth, sand, clay, stones, the substances of vegetables that hitherto had no value and no use but for dung. And what is the expense for producing such great things? None, except for the first machineries, of very simple construction, and for the first moulds of all things to be artificially made; for the machineries themselves, as well as the moulds for casting the materials for use, are to be made by the same machineries, and may then be multiplied to any number required, without any labour or expense.

Such is the domestic life to be enjoyed by every human individual that will partake of it. How different from that of even the mightiest monarch, or the richest man of our times?—No fear of being robbed or cheated, no cares of managing the household, none even for the education of children; for this will be provided for, by a *wise* people, in a general way, for generating and cultivating good feelings and instructing the mind of all what is to be known; no anxiety for preserving or increasing property; no disgusting objects and occupations vexes there the mind; no low vices and crimes, resulting from want, or fear of want, and poverty, surround man; there is but one desire predominant in all;—this is, to live as happy as they can, and in order to live so, to please and to be pleased. Love and affection may there be fostered and enjoyed with-

out any of the obstructions that oppose, diminish, and destroy them in the present common state of men. The minds and feelings will be enlivened by nobler springs, in proportion of their physical and mental improvement, which therefore may cause a character as superior to the present civilized men as this is to that of savage cannibals; for there will be no object, and no cause, any more for low cunning and deceit, for gaining advantage over his fellow-creature in fortune and rank; the dealings between man and man within the community consist no more in selling as dear as possible, and buying as cheap as possible; there is no traffic, because every thing is as cheap as water, and as free as air; there is a very different kind of dealings to step into the room of our present market business: this is to *enjoy* life as well as possible by mutual sociality, by social arrangements, by reciprocal communictions, by public pleasures and instruction. Man sees there himself, not waited upon and surrounded by low, miserable, degraded beings, which he has to watch, to pity, or despise. There he sees himself and his endeared friends, and his fellow-men in general, raised to the highest station that human life be capable of.

Is this, perhaps, to be called but a fancy? What should hinder man from enjoying his life in such a superior state of general happiness, when a plain way is shown to him for attaining it? There is a stronger impulse in human nature for enjoying happiness, far stronger than all futile sophistry could pretend against it. Man is made for society, not for solitude, like beasts of prey. He is made for joy, not for mourning his life

away. He is a being capable of great sufferings and of great enjoyments. The fears of the ones and the hopes of the others actuate him. It is but misconception of our destination, barbarism, ignorance, superstition, and insanity itself, that may prefer suffering to enjoyment, or a less sum of happiness to a greater one. The greatest sum of happiness is only to be found in social and friendly life: this will and must be courted, when the causes of enmity between man and man have ceased. These causes of enmity are unavoidable in our present state of society and general poverty. But they all will and must subside in a state of superabundance and liberation from all disagreeable labour and occupation, and opposite interest.

There is no variety of opinions to be dreaded. Let there be as many and different opinions as you please, there will be no compulsion; every one may live as he pleases; but there will be no difference in the desire of living happy, and therefore peaceably. This desire will be sufficient to let each other in peace, and to wish and seek friends with whom to communicate and partake of the ideas and enjoyments.

Will it, perhaps, be said, man will grow weary of his time by living but in enjoyments and idleness? It is true, man will be no more a slave to work and drudgery and insipid occupations; he will be no longer under the sad necessity to struggle through life for life; his mind will no longer be absorbed by mechanical pursuits for his livelihood, for earning money; he will no longer, like a beast of burden, live but for to work, and work but for to live. What, is man such a poor, miserable creature by nature, that he cannot live with-

out living like a beast of burden, like a slave? Is there no better destination of the human being to be looked for? Is he, perhaps, of so corrupted and so hideous a nature, that he *must* be kept in fetters of slavery like a dangerous, mad animal? A very fine doctrine, indeed, for all tyrants to keep their fellow-men in subjection and stupidity, in order to make use of it for themselves! No wonder if such doctrines were preached with great sanctimoniousness to the multitude, in countries of unlimited despotism; and no wonder if such doctrines got so deeply inveterated into the minds, by length of time and continual repetition, that they were transplanted even to happier and freer countries.

Man will grow weary of any thing, where he sees nothing but sameness and tediousness. But does it follow thence, that he will grow less weary of his time when he is made less happy? Will he grow less weary of time, when his resources of pleasures and enjoyments are made less, and his drudgery, cares, and vexations are made more? A curious piece of logic, to affirm such monstrous absurdity! Yet it may be used by some who pretend to large share of wisdom.

Let us cast a glance to the resources that men will immediately possess in this new, happy condition for passing and enjoying their life.

Man may spend the greatest part of his life in company of the objects of his love and affection, increasing thereby his own happiness and that of his endearments in conversing with them, and imparting to and receiving from them pleasure and instruction, in passing with them through an endless variety of pleasures and

gratifications of senses, of feelings, of fancy, of intellect. There will be a continual feast, parties of pleasures, novelties, delights, and instructive occupations. Man may rove about in the gardens, in pleasant walks of crystal, and between flowers and vegetables of infinite variety and appearance; he may amuse himself in amphitheatrical and level places, filled and bordered with every thing that art and nature can produce for the delight of man; he may glide in elegant gondolas upon water clear as crystal, beautified and enlivened with fishes and swarms of land and aquatic birds, bordered with the most beautiful sceneries, reflected again in the water. Is he fond of gardening?—He may follow his inclination in the most agreeable manner; he may arrange and cultivate flowers, shrubs, trees, as fancy and notion, or curiosity for experiments dictates him; there will never be an end in objects and new experiments. Is he fond of mechanical occupation?—He may exercise his dispositions and talents to an extent beyond the present conceptions: he may form models and moulds, and see the objects multiplied for use and show to any extent, without any further trouble. Is he gifted with talents for drawing, painting, sculptures, &c.?—He needs but to make one model of every figure, and it may then be multiplied to any desired number, by moulds, etching and printing machines. Is he fond of music?—Where could he find more opportunity than in such a life? He may at once delight and be delighted, by performances of his own and in company with other musicians: instruments and means are at his disposal unknown yet; and his compositions may be repeated and multiplied by mechanical plays

and machines. The communities will have means to command and procure whatever is to be found in the whole world for enjoyment, amusement, and instruction. The gardens, and the vast and numerous halls, are adapted to receive the objects. Is somebody inclined to the study and amusement of botany?—He may see, in a botanical garden, the plants in their natural state, and read whatever is known of the qualities and uses and organism of any one, in a particular book for every one, kept in a box at the side of the plant. Has one a notion to instruct and amuse himself of natural history and curiosities?—He may go into the museum in one of the halls, where he may see displayed all what nature exhibits to man on the whole globe; he may read there the ample description and history of every individual or object in a particular book being at the side of it. Has any body a taste for mineralogy?—He may gratify it to his satisfaction in properly arranged and described collections of minerals. He may read and study the ancient world in petrifactions of organic beings that are extinguished, arranged in their natural connexions with each other and with those of the present world. Does he seek information in the history of nations?—He may see it, as much as there is known of it, displayed and explained on proper maps, with streams, branches, and ramifications of different colours, representing the times, and nations and their branches, from the remotest antiquity down to our time, by a certain system of signs; he may see there, at one glance, the rise, increase, conquests, dominions, influences of some, and the downfall, subversions, and subjections of others; the character, religion, system of state, man-

ners and customs, occupations, resources, geographical situations, productions, climate, manner of living, &c., of every people known in ancient and modern history; there he may trace the origin of the present nations, and their various relations to each other. Will he amuse and instruct himself in the details of history?—He may read books on every nation. Will he take information in geography?—He may go into the hall, where not only maps and books are, but also large globes and maps in reliefs, representing mountains and heights of land in their natural proportion, also the extent of notable large places of any description. Galleries of pictures and prospects may be exhibited every where in the square. In particular halls may landscapes and prospects of foreign countries be represented in their natural size and appearance, by large camera obscura and clara, so that he may see all the most notable curiosities, cities, and prospects in the world, without travelling thither. Has he a notion for reading?—He may go to the reading-hall, where many thousand selected books on all subjects of reason and fancy are stored. Has he a mind to make himself acquainted with physics, chemistry, anatomy, mathematics, astronomy?—He may go into the auditories and laboratories, and see the experiments and observations made and explained. Will he hear and partake of philosophical and other speculative disquisitions and discourses?—He may gratify his desire every day, because there will never be a want of objects, nor of curiosity. Will he sport in the news of the day?—He may amply satisfy his curiosity by reading the news of every day from all parts of the world, and also telegraphical

news. A tachigraphy, with peculiarly adapted characters, and lithography may be united, and printing establishments, by which the composing of words may be effected as quick as one speaks, and the copies multiplied without labour.

What an endless variety of highly instructive, useful, and amusing objects are there presented for one's gratification !—The past and present world, the history of nature, not as imagined by the superstitious and ignorant, but such as nature shows herself to the thinking observer; the mysterious and instructive operations of nature; the history of man, from antiquity down to us; the documental remnants of his former sciences, arts, customs, ideas, manners of living, &c.; the endless variety of organic beings, their organisms, nature, and use for men; the unorganic substances in nature, and their various uses; the phenomena in atmosphere and water; the visible universe of millions of worlds at night, beheld through mighty telescopes and explained; the worlds of beings presented to the eyes by microscopes; optical instructive amusements of various kinds, views of landscapes and prospects without end; drawing, painting, sculpture, modelling, gardening, music, reading, theatrical sceneries of endless kinds, for amusing and cultivating the mind and the finer feelings; discourses, lectures, conversations, news of the day; parties of pleasures of various kinds, social plays and amusements of mind and body.

Can it be supposed with any shadow of reason, that man, in such circumstances, ever may grow weary of his time? There is no laborious study or occupation; it is but by amusement, by gratifying the curiosity

natural to man and child, that man will thus get acquainted and familiar with all knowledge of things, that the whole world may present to the human observation; he has but to look at the objects, and receive the instruction about them by written or oral communications; he may see and handle them himself, whenever he has a desire to do so. The objects of human knowledges, nature herself, are displayed before him; they require no labour to see and observe them; he may familiarize himself in the same manner as he does now with the products of his field and workshop, or the articles in a market. They are so vast and numberless, so instructive, so important to use, reason, fancy, and feelings of man, that they afford a never-ending variety and novelty. And knowledge begets knowledge, ideas beget new ideas; the dormant faculties of men will be roused, a spirit of inquiry kindled. Every day will bring forth new knowledges to every individual; the desire of knowing more, of communicating to others what has struck and amused the mind, is natural; conversation will turn upon the subjects that are the most interesting to the mind, and will generate mutually new ideas and knowledges. What an immense store and variety of subjects of the highest importance will then animate the conversation! There will be hardly any time left for trivial phrases, and discourses, and occupations. The child will learn thus more, and in a more impressive manner, than what the most learned men at present have acquired with the most laborious study; it will learn the knowledges of things in the same manner as it learns its mother tongue, that is, without being

conscious of learning, without disagreeable exertion, without compulsion. It is but the light of true knowledges, of knowledges of real things, the free and unfettered exercise of the mental faculties, that can gradually dispel the gloom of superstition, errors and ignorance, the bane of human life, the disgrace of any people, and the greatest curse of the whole mankind yet.

Man will then soon learn, that he knew hitherto not one thousandth part of what he might and ought to know for his own benefit, and that he knew hitherto not one millionth part of what he was persuaded to know. Nature is veiled in mysteries to our immediate perceptions. Our own life, the whole nature around us, continually active and powerful, are mysteries to us. A great deal is unveiled by assiduous observations and experiments of studious men in the latter times. An infinite greater deal is yet to be unveiled and applied to our great benefit, to the melioration of human life. It is hardly one century ago, that men would have been roasted alive, without pity, as sorcerers, not merely by the rabble, but by the sentence of the judges and laws of the then most civilized countries, ours not excepted, had they shown physical experiments that are known since. These, our forefathers, committed such horrid barbarities with all the gravity and honesty that any of us may be capable of, and would have looked upon any man as a horrid monster of infidelity, who had dared to deny the possibility of such a crime. Such are the necessary consequences of ignorance, prejudice, and stupid adherence to custom. Is, perhaps, our present generation free of irrationality and

error?—Have we, perhaps, reached now the summit of human wisdom, and need no more to look out for any mental or physical improvement?—This is exactly the way of thinking that ever barred the road to intelligence. Let us see whether we have some reason to suppose that we are just arrived at the period where every thing is so good and perfect, that there is no occasion to trouble ourselves any more about making improvements, that we have a right to treat all those as fools who attempt any thing towards the improvement of the human condition, and that we disgrace ourselves in paying any attention to new ideas.—A fine apology for mental sloth and stupidity!

Not one ten thousandth part of men in the most civilized countries are actually engaged in any study or investigation of nature.—Still, is there any other source of true and useful knowledges?—Only a few professional men of learning occupy themselves with teaching natural philosophy, chemistry, and the other branches of the sciences of nature, to a very limited extent, for very limited purposes, with very limited means. The rest of men have to pass their lives in drudgery and trivial occupations, and in ignorance, in many erroneous notions of nature, for want of means, time, and chance for information.

What would be the increase of knowledges, if a large community, with unlimited means, might follow the natural impulse of curiosity in investigating nature?—Is it not most probable, that they would discover in one year more than hitherto in centuries?—Man is a product of nature. His life is depending from the air he breathes, from the nourishments he

takes, from various causes that surround him, visibly and invisibly. His life is liable to many evils, and to a very uncertain duration. He may remove or avoid the causes of many, if not of all evils; he may invigorate and prolong his life. The more he learns to know the causes of evils, and the means of health and happiness, the more it will be in his power to increase his happiness, to preserve his health, and to prolong his life. Who knows to what happy results a general spirit of investigation, with unbounded means, may lead?—The ancients, among whom sciences flourished the most, knew probably more of nature already, than we know now of it. In this new state of men, every thing that may be found contributive to health and happiness, may be applied immediately after its being known. The more man understands to read in the infinite book of nature, the only fountain of true knowledges, the more eagerly he will read in it, and the more he will learn of it.

Can it be apprehended yet, that man, in this new, infinitely happier state of life, will grow weary of his time for want of occupation?

What immense difference between such a life, and that which has hitherto been the lot of man?—A life of information, of ten thousand times a larger sphere of activity, and of continual enjoyments, and satisfactions in endless variety, and of but friendly social intercourse;—and a life of drudgery, of trivial occupations, of tediousness, vexation, anxiety, want, and fear of want, and of general poverty in resources for pleasures and enjoyments, of general ignorance in the most important knowledges of things, of opposite interests in

society, of enmities, mutual distrust, mutual injustices, and crimes and barbarities!

But some are taught to say, a life of enjoyments, pleasures, and luxury, a life of happiness and wealth, will enervate and corrupt men.—Poor men! They cannot think, perhaps, of enjoyments and luxury, without recollecting what they know or heard of the poor enjoyments and miseries of grog-shops, gambling-houses and bordels, where men, tired of their tedious life, and impatient of their misfortune, seek to drown their minds in oblivion for a short time, by making themselves crazy and miserable. Or they will allege examples of nations in ancient history, which kept themselves in a state of independence while they were poor and had to live in ignorance, by hard labour and robbery, like the ancient Romans and other nations, but lost their independence in the course of political events, or by corruption, caused by relative want and avidity of influential individuals after more wealth, information, and seductive means, were introduced.—Poor logic, that does not look at the real causes and consequences!—As well might we prefer the state of our savage Indians to our own. We are rising into a most powerful people, while we do not despise the comforts of life, when these unfortunate savages, by all their hard life, dwindle away to nothing.

I have drawn but the sketch of domestic life within our immediate reach. But man is not to be confined to domestic life; he may roam over the whole world, not in hardships, perils, and deprivations, but, with his family and friends, in all security, refinements of social life, comforts and luxury, as well as he may

enjoy at home. Large, commodious vehicles for carrying many thousand tons, running over peculiarly adapted level roads, at the rate of forty miles per hour, or 1000 miles per day, may transport men and things, small houses, and whatever may serve for his comfort and ease, by land. Floating islands, constructed of logs, or of wooden stuffs, prepared in a similar manner as it is to be done with stone, and of live trees, which may be reared so as to interweave each other and strengthen the whole, may be covered with gardens and palaces, propelled by powerful engines, and run at equal rate through seas and oceans. Thus, man may move with the celerity of birds' flight, in terrestrial paradises, from one climate to another, and see the world in all its variety, exchanging with distant peoples the surplus of productions. The journey from one pole to another may then be performed in a fortnight; the visit to a transmarine country in one week or two; a journey around the world in one or two months, by land and water. What new objects of inquiry will then be afforded, and in what rapid succession will the knowledges of men increase?—But not only the surface of the globe may be soon explored, but also the interior of the earth. Man will have the means to search the bowels of the earth, and make the best use of it for his life. New sciences, new conceptions of the earth, of nature in general, and of all her productions, will arise. Man may search into the earth, without labour or danger, many miles deep, and discover new things not known, and never imagine yet.

By searching through the whole Nature after her

hidden operations, under ground, over the whole surface of the globe, in her general and individual organizations, by magnifying glasses, by experiments and observations of physics, chemistry, and of all objects of curiosity, on extensive plans, with unbounded means, and thousands and myriads of observers, men will discover gradually keys for disclosing one secret of nature after another, and apply the discoveries to his benefit. Who may say where such endeavours may end, which all, through mighty excitements and instruction, must be highly pleasant.

What objects for enterprising men will here be presented?—There are boundless fields for human activity of superior order; there are excitements and objects of the utmost importance for exercising the faculties of reason and fancy; there the human being may and will rise higher and higher above brutes, and make himself more and more lord of nature.

How trifling, how insignificant, how tedious must all our present occupations and pursuits appear, when we compare them to this new sphere of actions!—

There is no fear of wars, robbery and murder, any more. The powers and means of such a magnitude are here contemplated but for creating a paradisaical life; but they might also be used as the most terrible and irresistible weapons of protection. Wisdom and humanity will, however, never glory in the needless destruction and misery of fellow-men. Men of such exalted station of culture and happiness, as the new means afford, may to foreign people of a lower station of intelligence, tender with one hand large and substantial benefits, and improve gradually their mental

state, until they become worthy associates; while, with the other hand, they may keep them in awe by the exhibition of destructive power; and thus effect, like gods, respect, awe, and gratitude, among all peoples with whom they have intercourse.

They may safely extend the benefits of these new means for human happiness upon all men on earth, without fearing any derogation or danger to themselves; for the world is yet large enough to afford superabundance of all necessaries and comforts of human life, for many ages to come, for the whole human kind, even by the most rapid increase of population. The seas and ocean, and all sterile spots on the globe, may be rendered fruitful. The surface of the globe is about 200 millions of square miles, of which the half has no winter, that is, the belt of the globe, between about thirty degrees of north and south latitude, and may yield every where several crops in a year. So there are about 100 millions of square miles of the most delightful climate, and may produce the greatest luxuriancy and variety of vegetables. It is known that there, in some parts, one or two square rods may produce sufficient food for one man. But suppose, in the possible highest state of culture, it should require ten square rods for every human individual, an estimation by no means out of reason, when we consider our new means for superior culture, and the richest soil artificially made, that never is deficient of plenty of water, the unparalleled great quantity of food that may be raised thereby, and that more than one of the most luxuriant crops is afforded every year, and the comparatively small wants of a man for his food, if

properly managed: at this rate, one acre would nourish sixteen human individuals, and one square mile about 10,000. The most splendid and spacious habitations would hardly occupy one-sixteenth part of the area. Thus 100 millions of square miles might nourish 1,000,000,000,000 of human individuals, that is, about 1000 times as many as there are actually living on earth; and all might enjoy all the happiness that human nature be capable of, and this world may afford for man. I am but speaking of the means known to me; but who might assert that they may not be still further extended?—Chemistry, and other knowledges of nature, may teach other ways for multiplying and accelerating the productions of nature for the nourishment of man.

Therefore, there is no cause for envy, fear, and enmity, between man and man, or between nation and nation, except ignorance and error.

All men may plentifully partake of the benefits nature affords to human enjoyment, by a wise application of her powers and means. It would be as ridiculous then, to dispute and quarrel about the means for our life, than it would be now about water for to drink along mighty rivers, or about the permission of breathing air in the atmosphere, or about sticks in our extensive woods. Whatever we may buy now by money, has its value derived from labour bestowed upon it, or from its scarcity. Where there is no labour required, and no want to be feared, there is no occasion for buying or disputing possession, just as it is with water, or air, or other articles of no value, though necessary to life.

This happy period is to be looked for at no great distance; it may be effected within ten years. However, the first object we have in immediate view is to gain wealth, or its representative, money, in order to procure what we want for our purposes.

We are used to estimate every thing by the price of money it may cost or bring; every gain or loss is measured by the difference between the price of purchase and sale. It is therefore natural that it will be questioned, what pecuniary profit is to be obtained by these means?—Though the answer to this question is but of inferior merit, as it tends not immediately to the improvement of the human condition, but merely to transient, limited advantages of individuals,—yet it will probably serve to elucidate, to the most common conceptions, the benefits of these means in the most striking manner.

There is no exact estimation of the pecuniary profit to be made, because this depends from localities, circumstances, price of labour and materials, from conjunctures of commerce, from the extent of application, and various other particulars. But a general estimation at the highest or lowest calculation, according to general experience of prices of the concerning articles, may be formed. I shall make here the lowest estimation of gain, without however being positive, leaving it to others to correct or complete the calculation, after they are acquainted with the particulars of the enterprise.

The beginning of the execution of the proposals is to be made under all the most favourable circumstances that can be selected, as well with respect to locality as to other pecuniary matters. It will also no special

proof require, that by too small a principal, and by too narrow a limit in the execution of such a plan, the gain would be of little consideration.

There are many enterprises of roads, canals, manufactories, &c., executed in our country, at expenses of millions of dollars, which were brought up by voluntary associations, with shares of fifty dollars, and less, so that even the poor could participate in the enterprise without endangering his small fortune. It may, therefore, be considered as a moderate sum, brought together in a similar way, when rated at 200,000 to 300,000 dollars for the beginning, which may be sufficient to create the first establishment for a whole community of 3,000 or 4,000 individuals in the described manner. Suppose one year for the preparations. Suppose in the second year one man effects by the machinery as much as 1,000 men would do with working in the usual manner,—a very low estimation, considering what has been stated of the power and means. Suppose the work of a man for the whole year, to be worth 200 dollars, in an average. Then one man, with this machinery, would gain the value of 1,000 times 200, or 200,000 dollars in the second year. But besides this gain, the machinery may be applied to convert all the raw materials requisite to establishments and machineries of the new kind, into the finished pieces for use, so that they require but transporting and putting them together into machineries, &c.

The machineries are simple, and are thus to propagate or multiply themselves without labour:—nine machineries would be a comparatively small object for being made by one established machinery in one

year. Thus there may be in the third year ten machineries or establishments, in the fourth 100, and in the fifth, 1,000 machineries or establishments. The revenues would then be, in the third year, ten times 200,000, or 2,000,000 dollars; in the fourth, ten times as much again, or twenty millions of dollars, and so in the fifth, 200 millions of dollars. Allowing the revenues of the first four years for purchasing the required raw materials for the new establishments, there would still remain a gain of about 200 millions of dollars; that is, each dollar for the beginning would have been increased to 1,000 dollars in five years. The productions of these establishments would all find every where a sure market, because they would be but articles of necessaries, and real comforts of life, produce of the ground or materials for use, surpassing what has been in use hitherto; they would command the price, and their transport would require but a small portion of their value, by applying more perfect means than usual.

A share of twenty or fifty dollars for the beginning, would thus increase to 20,000 or 50,000 dollars.

But how would it be thereafter, in another period of five years, beginning with a principal of 200 millions of dollars?—The extent of establishments would, at the supposed rate, increase to the number of millions, and might consequently comprehend the whole world and the whole human race, in the greatest perfection of the idea exhibited. The whole world might therefore be really changed into a paradise of the described kind, surpassing all conceptions hitherto, within the first ten years, beginning with but 200,000 or 300,000

dollars. If it be not, nothing but ignorance, prejudice, and dull adherence to custom are the causes of its being retarded any longer; for it is not poverty, not insufficiency of means, as some lazy, prejudiced minds might plead for their excuse—not one thousandth part of the means within our possession is wanted; it is not want of chance for information on the subject, which is offered here nearly gratis; it is not want of clearness in the proposal, for every explanation that may be wished for, is promised to be given satisfactorily, as soon as an earnest desire and disposition for making the experiment is shown, *by organizing an association of a sufficient number of persons, with sufficient means, for transacting business in an orderly way, in examining the subject, and forming eventually the resolutions.* Or do the facts exhibited, perhaps, not deserve any such attention?—Examine them as close as you please, and see then whether they are not the most joyful and the most substantial truths that ever could be shown to men?

There is no claim made upon you, so you have no imposition to fear; you are made acquainted with the principal ideas of the proposals, and it is offered to you all the specifications required to a perfect conviction. All is done, and shall be done, in an honest, sincere way; there is no artifice, no enticement for vain and hazardous speculations. If I be in error, it will be an easy matter to discover and expose it. I defy any who thinks himself capable for it to do so; to that purpose I offer the opportunity for fair and open discussion upon the subject. But it is a mathematical matter, and none of vague opinion, or mere wordy dispute,

as some might perhaps fancy. Any assertion without mathematical argument, will, and must be disregarded by me. For talking at random about mathematical subjects, and replying to it, is mere trifling, and to no purpose; and trifling on a subject of so serious and high an import as exhibited, is no mark of an intelligent mind desirous after truth.

It will now be plainly seen that the execution of the proposals is not proper for individuals. Whether it be qualified for the government at this time, before the subject is become popular, is a question to be decided yet by the government itself; it would certainly be a great fortune and glory for the nation, if no prejudice would prevent the majority of the government from bestowing attention upon the subject, and promoting to application for the public benefit whatever be found useful of it, by careful examination of some committee. But whether this be the case or not, it will not interfere with the interest of a society formed for the purpose of investigating, and eventually executing, the proposals; this might be supported by the government, and aid the government on their side in its acts.

The means for making the first experiment on a sufficient large scale, will be a trifle for a large society: the principal required for the first establishment may be laid out in shares, not greater than the price of a lottery ticket, which may be subscribed previous to the resolutions of the society; for the funds must be ascertained, before any resolution can be formed upon the execution of any plan. The subscriptions, however, need not be obligatory to the subscribers, but may be

made on the express condition to withdraw the obligation, in case general conviction of the practicability and utility of the proposals be not established, and at least the majority of the subscribers do not concur in the assent to the execution of the proposals. Orderly free deliberations, and mutual communications, must determine the resolution, as it is the case in all well-regulated associations. For this purpose the following Constitution is proposed.

INTRODUCTION.

Improvement of our condition is, and ought to be, our continual aim as long as we live. It behoves not to rational men to abandon their improvement to chance, or to the feeble inefficient efforts of individuals, but to seek and employ the means for it, in the best way that is in their power. Man, as an individual, is weak, and whatever his means or abilities be, they are always very limited, in comparison to those of many men joined into one body. His contrivances and pursuits can be but for his separate private interest, and must therefore be very limited and transient, like himself. He sees every where his interest opposed by all with whom he has to deal, and must therefore oppose his endeavours to all of those who deal with him. Therefore, nothing great for the improvement of his own condition, nor that of his fellow-men can ever be effected by individual enterprises. Man is powerful but in union with many.

The government of the state cannot interfere with the domestic concerns; it can only regulate the means

for keeping the citizens peaceably together, and for protecting every one in his rights; it may favour and patronize improvements of any kind, but it cannot enforce them. Men must concur freely in any measure or enterprise for their own benefit, or else there is counteraction and dissatisfaction.

An union of men who make it their purpose to deliberate together upon all means for improvement of their condition, that may come to their notice, is yet a great desideratum. They may receive every proposal to this effect, from within and out of their union, examine the merit of it, and deliberate upon. Majority of votes in some cases of minor importance, unanimity in cases of contribution, may decide the resolutions for the whole union, while parts of them, when the whole union cannot agree, may form separate bodies for their own purposes, without separating from the whole union in all their other concerns. Individual prejudices against new things would thus, by a liberal spirit of deliberation, be weakened and removed, the minds enlarged, mutual confidence, good dispositions, and union promoted, and great things for improving mentally, and physically, the human condition, effected, which could never come to existence by mere individual endeavours. Inventions and discoveries of every description may find due rewards, in allowing a reasonable share of their advantages, while they are practised by the union, as encouragements to inventors for communicating them, which else might never be sought after, or never be communicated, and lost. The patents of the government, for inventions and discoveries, are but for petty, private purposes, but not for improving the human

condition at large; they can have, at best, but an indirect and remote influence, by chance, upon improvement in general.

The knowledge that is scattered among individuals, and employed only in the limited extent which petty private views will admit of, may be thus concentrated and made known to all the members of the union; a spirit for improvement will then be kindled, and, by contributing but small sums for enterprises to the benefit of the whole union, great things may be effected, without great sacrifices of property,—things of the greatest benefit, that by separate private enterprise could never be attempted.

The benefits of all new things tending to the improvement of the human condition, will thus be open to all, both to the rich and poor, whoever will participate of them, for a trifle if one chose, while larger contributions entitle to proportionate larger shares in the resulting benefits. The saving of human labour, the increase of productions, is then no longer a curse to the many, but a blessing, as it ought to be, to every one, rich and poor, in the union.

With these views and tendency towards improvement of the human condition, in physical, moral, and intellectual respects, we unite ourselves by this present constitution, as follows:

1. The title of our union shall be,

"*Association for the improvement of the human condition.*"

2. Every person is admissible to our association which pays at least one share of —— dollars into our treasury.

3. At the end of —— years, any member may separate, and take his share of the common property out, either in cash or productions of the establishments of the association, as the majority think proper.

4. At the end of every year, concluding with the —— of ——, each member is entitled to receive his share of the net profit of the establishment which he or she shares in.

5. The majority of the society decide in all cases, without, however, nullifying any existing obligation, in which cases unanimity is required.

6. Two-thirds of the members are at least required to form a quorum in any assembly duly published before to all members, and are empowered to act for the society.

7. In every assembly, the day and place of the next is to be appointed.

8. The society is to have one president, —— vice-presidents, one secretary, —— vice-secretaries, and one treasurer.

9. The president is the organ through which all communications to and from the society are to be made; in the meetings he has to watch over a proper decorum, and he may convoke extraordinary meetings when required.

10. The vice-president has to act in the place of the president, in case of absence or inability of the president.

11. The secretary controls and records all transactions of the president.

12. The vice-secretary performs the office of the

secretary, in case of the secretary's absence or inability.

13. The treasurer receives and pays the money on order of the president and secretary conjointly; he is subject to the special revision of the president and secretary conjointly, whenever they judge proper: he has to keep book in the prescribed method, and to give account to the society, whenever called for; and he is responsible for the treasury, for which he has to give security.

14. The association is limited to no particular country or place, or number of members, and may extend to any part of the world, by co-ordinate branches, constituted in the same manner; which branches may be denominated by successive numbers; and every branch may again be divided into parts, each constituted in the same manner as the whole. All branches are connected by deputies, in a central congress of the whole association, and the parts of a branch likewise by deputies in general meetings of the branch.

15. All branches, and parts of branches, communicate reciprocally all their informations received, or experiments made, when of general interest.

16. Any branch, and part of branch, may form separate establishments independent of more general enterprises.

17. Any invention, improvement, or discovery entitles the inventor or discoverer, or his assignees or heirs, for the first ten years of their application, to one tenth of the advantages resulting therefrom to the

association, or to any individual or individuals of the same, making separate or joint use with others of the invention, improvement, or discovery; and thereafter, for ever, to one-twentieth of the benefits resulting therefrom, to the same extent and meaning as expressed, or to one-twentieth of the property invested in the application of the same invention, improvement, or discovery.

18. If any improvement be made on such invention or improvement, by some other person, it diminishes not the original share of the first inventor, as before stipulated; but the inventor of the new improvement is entitled to one-tenth in the ten first years of its application, and to one-twentieth ever thereafter, only of those advantages that his improvement affords to the society, or any part, or individual or individuals, over and above the advantages of the original invention, and so forth with every other, second, third, &c., improvement on what was known before.

19. Every member, as well as every branch or part of branch of the association, obligate themselves to the same conditions of the two foregoing articles, if they make use in any way of such invention, improvement, or discovery.

20. The association, or any branch of it, or any part of branch of it, cannot dissolve, or dispose of any establishment, before they have satisfied, as stipulated, the inventor or discoverer for his share in it.

21. Every member of the society, and every branch, or part of branch, is to receive a copy of the Constitution.

Thus you may spread a net over the whole world, not for ensnaring, oppressing, and enslaving men, as has been done hitherto, but for exercising the most beneficial influence, for preventing all hurtful and dangerous consequences, and violent revolutions that might follow from an introduction of these means without precaution; for, by a system of association that opens the way to all the benefits to be derived from the new means for the poor and the rich, no violence or opposition can ensue; but all men will simultaneously enjoy the benefits, wherever they are introduced, while the first undertakers reap all the fruits of their enterprises that can possibly be reaped, in perfect security. You have to offer to the human kind at large the most substantial gifts, the direct road to the greatest happiness that man is capable to enjoy in this world; not vain, empty, delusive systems or doctrines, but all the physical enjoyments imaginable. Man must first be satisfied with his physical wants, and be liberated from the slavery of work, before his mind can be accessible to superior culture. After you have done with the physical wants, then you may gradually shed the mild beams of better information into the mind, and render it more and more adapted to enjoy a superior life of a refined society.

Who has to make a beginning with this great work? You yourself, reader, whatever your station in society, your fortune, your education, be. You have no reason to stay behind any of your fellow-men, and wait for what he is going to do, as soon as you are convinced of the truth of what has been demonstrated; for, if every one would wait for his neighbour, with acting his part, there would never be any acting, and man

would be a very ridiculous animal. Did you ever ask, who is to speak and to vote first or last in your public affairs? If a mountain of gold were shown to you, accessible to every one, would you ask who is to stir first, and wait for any of your neighbours? Is what is here presented to you, perhaps, of less value?—Examine, reflect again. What is then to be done for your part, to promote this great cause?—The same thing you do in public concerns; express independently your conviction wherever you may have some influence. The constituting of a society, no matter how small, in your neighbourhood, is to be the first object; and on notice of it to me, under the direction given at the end of this book, further communication will be made. Thus you may give independently the first impulse to this great work, whatever your circumstances be. Do not wait just for men of better learning, or higher standing, or greater fortune; for this is a matter of reason, and sound active reason is not the exclusive endowment of learning, fortune, or rank; none of these circumstances exempt from prejudice and mental weakness; experiences prove this amply every day. The way for putting the matter to the test is pointed out; it is plain, and without expenses: the execution of the proposals itself requires no fortune; small shares of twenty dollars will be sufficient; and even these may be accepted partly in work, after a small part is paid to the treasury of the society.

There is then no sacrifice, no risk, but incalculable fortune and glory attending to this cause. All what is to be done, is, to step forth, after mature reflection,

to confess loudly one's conviction, and to constitute societies, which are to increase by offering reception to whomsoever will join, till the subscribed shares afford sufficient means for making the first experiment.

The names of the first supporters of this great and most glorious cause of human kind can never sink into oblivion, as long as there will be any record of the past, and any feelings of gratitude in the human bosom, and as long as the name of ENLIGHTENING will have a meaning; they will resound with gratitude and respect in all languages of their cotemporaries and after-ages; they will be celebrated in feasts of public joy and grateful feelings, from one extremity of the world to the other, like you do now with those of your first brave assertors of your national independence and the rights of man. Those bold and humane proclaimers of independence and liberty had put their lives, their fortunes, and their honour at stake. You have nothing to risk, nothing to encounter, except perhaps the feeble efforts of vulgar prejudices and thoughtless frivolity, which are apt to throw the ridicule on whatever is above their little notions. Fools will glory in ridiculing what they do not understand, because it gives them the appearance of wits in the eyes of weak minds; but men of good sense will inform themselves before they judge of the matter. Is any of you perhaps afraid of the little endeavours of such fools?—They might be easily silenced; but you may as well let them have the little fun, and disgrace themselves as much as they please: men of good sense ought not to be impeded by puerilities of others, in their proceedings for such a

serious and most important cause that ever could actuate rational men.

Is there, perhaps, any thing unreasonable or impracticable in the proposed manner of execution?—There are extensive societies in our country for pecuniary and philanthropical purposes of various kinds. There are missionary societies for all quarters of the globe, with great expenses, and no pecuniary gain to the contributors. There are lyceum and other associations throughout the whole nation for the general improvement of man. There are many societies for humane purposes. There are societies for constructing canals and roads, with millions of dollars of expenses, with but uncertain prospect to immediate gain. There are social enterprises with large funds for hazardous commercial purposes on land and sea. There have been voluntary contributions of large amounts for the benefit of foreign peoples.

Are the objects presented here less worthy of notice than any of those for which the people have spent voluntarily large sums?—Do the objects presented here not include every object of philanthropy and speculation of any kind, and infinitely more than ever has been thought of?—Or does the attainment of the grand objects in view require more means than there have been spent and are spending for purposes very inferior in every respect to the present?

The numerous expensive enterprises for improvements by associations, bespeak too manifestly the American character and spirit for social great enterprises, as to require here my demonstration on the utility and practicability of social enterprises.

Associations give decided advantages in all cases over individual enterprises; and it is only by associations that our nation achieves great enterprises, and may gain the superiority over all other nations in every respect.

There is nothing in my proposals that the Americans do not practise already, nothing new, but the objects themselves to be attained. Thus the manner, as well as the matter, as far as exhibited, leave no reasonable objection; and if the execution of the proposals should be retarded nevertheless, it would be but owing to dull prejudice that prevents attention and reflection,—a disgrace to the American people, which, for its consequences, could never be enough lamented.

Should, indeed, among twelve or thirteen millions of men that form our nation, not be found enough men capable of raising their minds above their every day's concerns! If this should be the case, then it is not true that the American nation is to be the first and most enlightened on earth; for these means would then inevitably pass into the hands of some other people, which might easily use them for making a prey or subject province of this country. When then hereafter the present exultation of the Americans in their national progress, should be compared with their neglect of means, offered with all the evidence that can reasonably be desired, for raising them at once to the highest station of national power and influence over the whole world, and of general human happiness,—how should the intelligent world then judge of our nation?—Why, not better than we do now of the cotemporaries of Columbus, Galileo, and other dis-

coverers of great truths contradictory to the vulgar erroneous notions of their times, when we read their history of the conflicts between the active reason of single individuals, and the slothful, brutal adherence to customary notions of the multitude—we deem ourselves happy to live in a better enlightened age, and among a more intelligent people.

I have shown now,—

1. That there are powers at our disposal, million times greater than all men on earth could effect by their united exertions of nerves.

I have derived the proofs of them from the most common experiences.

2. How these powers may be converted into perpetual motions with uniform powers.

3. What system of establishments and machineries is to be applied for doing all works by machinery, without labour; that there are but three or four simple contrivances required.

4. How by association, and shares of but twenty or fifty dollars, the first establishment is to be created; how, by means of this, the future establishments are to be created, without expenses and labour; and how, in five or ten years, even an universal paradise superior to all what is known may be created.

I have thus fulfilled my first promises. I offer to give any further explanations on these subjects that may be required, as soon as an association is organized. I shall communicate all the required details of the mechanism of the machinery to be applied, when the association is large enough, and has at least 200,000

dollars subscribed for the first establishment, and agreed to the conditions in the proposed constitution expressed. This is necessary to insure success, and not to deprive myself of the means for being active in this cause. It is, however, understood, that the society keep all their funds to be applied in their own hands, and that I engage myself only to communicate all what is requisite for the execution of the plans. This communication shall be made in full, without any reserve, gratis, if I do not convince perfectly the society of the practicability of the proposals; and I reserve only in the case of executing the proposals the share in the profit as stipulated in the proposed constitution.

Thus, every member will be at liberty to withdraw his obligation, after all communications are made of me.

I have thus done, and am willing to do, all what reasonably can be desired of me.

It is now put into the power of the intelligent reader to judge, whether my proposals are founded in reason, in evident truths, as I assert, or not. If they are, they must be the strongest inducement for further inquiry; they must annihilate all the preconceptions against them, and convince the mind, that the attainment of the immense objects in view are by no means impossible; and that the application of the exhibited immense powers requires but adapted contrivances, of which the system is also stated. This is what I intended by this address; and I have now to wait for the effect it will produce, before I can do any thing more in this cause. I consider this address as a touch-

stone, to try whether our nation is in any way accessible to these great truths, for raising the human creature to a superior state of existence, in accordance with the knowledges and the spirit of the most cultivated minds of the present time—or whether I have to look out for a more congenial spirit somewhere else. For it cannot reasonably be expected, that I should doom such glorious discoveries to the grave, merely out of regard to dulness and unjustifiable prejudice of any people in the world.

Americans! you are offered things which you could not buy by mountains of gold, and if they were as large as your rocky mountains. You are offered to live henceforth in magnificent, beautiful, and brilliant palaces, which the mightiest monarchs on earth were too poor to have; in blissful paradises, where all is splendour, beauty, and delight; where luxuriancy of growth affords superabundance of all what is delicious to man; where you may array yourselves in all what is beautiful and brilliant; where you may lead a life of continual feast, free of labour, of want and fear of want, in endless variety of enjoyments and pleasures, in rapidly increasing knowledges for removing and lessening more and more the evils of nature incident to human life, and enjoying invigorated vitality. You are offered the dominion over the world, not by iron sway of tyrants, but by benign influence on the happiness of humankind, by attaching men to you by the most substantial blessings on earth. You are offered

the means to change the whole face of nature, on land and sea, into whatever man wishes to see, by magic-like power. You have afforded hitherto an asylum to the oppressed and persecuted of foreign nations—a far greater glory is reserved to you. You may henceforth cause a regeneration of mankind to a far superior kind of beings, with superior enjoyments, knowledges, and powers.

You have here the fundament of this discovery: some people may ridicule it, but they cannot disprove it; it is mathematically demonstrated before you. The remaining details shall be communicated to you, when you show an earnest desire for knowing them.

Look at the powers and means that are stated before you with mathematical evidence. Can you discover any material error in the statement? If not, can any of you behold them with dull insensibility, or perhaps with childish derision!—Can any of you refuse his most eager inquiry into the offered means? Can any of you behold these joyful and awful means without trembling, for fear some foreign people may come to the knowledge and possession of them before you, and abuse them for enslaving you and tarnishing your national glory for ever?

You are offered to associate into bodies, for close investigation and mature deliberation, to ascertain the merit of the proposals, without expenses: you may then induce your government to patronise or lead the applications of the means, if you think proper.

Ye, who form the councils of the nation, and who are the leaders of the people—here is an extensive un-

trodden field for the exercise of your wisdom, talents, patriotism, and beneficial influence on mankind at large—the time is come when you are put to the alternative, to show to the world, whether you are guided by wisdom or prejudice. It is not a mere transient, humble individual that speaks to you; it is omnipotent truth proved and recorded, which will bear incorruptible witness to the world either for or against you.

THE

PARADISE

WITHIN THE REACH OF ALL MEN,

WITHOUT LABOUR,

BY POWERS OF NATURE AND MACHINERY.

AN ADDRESS

TO ALL INTELLIGENT MEN.

IN TWO PARTS.

BY J. A. ETZLER.

SECOND PART.

Toil and poverty will be no more among men;
Nature affords infinite powers and wealth;
Let us but observe and reason.

The wise examines before he judges;
The fool judges before he examines.

LONDON:

JOHN BROOKS, 421, OXFORD STREET.

MDCCCXXXVI.

THE first part explains the general ideas on the subject of the paradise to be created for all men. This second part is to point out the gradual proceedings for the introduction of those means into our country.

I shall here begin with the most simple and the least expensive experiment, and then pursue, step by step, the most natural course to be taken in this country, until all the ultimate objects of the paradise be attained.

No country in the world is evidently better situated and constituted for the application of the means in contemplation, without the least detrimental consequences to any person, than the United States. Free from the blast of arbitrary despotism, with an uncultivated territory, sufficient for the reception of more than one hundred millions of men, which might revel here in superabundance of all necessaries, comforts, and luxuries of life, the United States might easily accelerate their march towards their supreme power and influence over the whole world, by inducing emigrants from Europe to settle in our extensive wildernesses in the west, with the application of the proposed means. It would require from Congress nothing more than to grant tracts of land for settlements, on reasonable terms, with a credit for a few years. The pay for

such land might be discharged by extensive improvements for the benefit of the nation, such as rail-roads, canals, draining of swamps, dams along rivers against noxious inundations, establishments for new settlers and travellers, vehicles for transporting men, and things of any bulk and weight, over land and water, to the immense benefit of the community at large, which the new means afford.

The first society for the application of some or all the proposed means, after having made some small establishment for the practice and exhibition of them, may obtain from the government patents for their new inventions, and for tracts of land to be settled and cultivated by their new means.

The immense forests of the nation afford not the least income, even for generations to come yet, if things go on as hitherto. The application of the proposed means, and if it were but for the cultivation of soil at the beginning, by which man may change, without labour, any wilderness into the finest gardens, to any extent of the country, would rapidly draw a vast concourse of emigrants from the older parts of the United States, and chiefly from Europe, to our unsettled western country, if our government would make some suitable provisions of laws for encouraging settlements, which might easily be done, to the great incalculable benefits both to the settlers and the nation in general. It is not the extent of surface that adds any thing to the power and weal of the nation; it is the increase of population and aggregate wealth that constitute our national greatness. If we have means to produce that greatness of our nation within our

time, what reason should there be to leave this to be done by a remote posterity? Where is the man whose pulse will not beat quicker, when he comes to understand the means for rendering our free country, within a few years, the most beautifully cultivated one in the whole world—to see our immense monotone woods and dismal swamps turned into the most delightful gardens, abounding of every thing that pleases the sight, and taste, and the smell, and the fancy; to travel on beautifully bordered rivers, canals, rail-roads, in any direction, from the Atlantic to the Pacific Ocean, within a few days, in all imaginable comforts and ease? And this would be but part of the results of the application of all the means proposed.

Let but the first experiment be known in Europe; grant to emigrants land, as much as they want to cultivate, on fair terms, and a credit of from three to ten years—which will be no risk for the government, and none for the settlers; and you will see the effects!—The dense population in Europe, the abhorred system of government there, the universal dissatisfaction of the great mass of the people, the distress and oppression that afflict the majority of the people, the certain prospect to a far happier life, without exertions, in this country—all will conspire to direct unheard-of torrents of emigrations to our country; add to this, that henceforth the ocean may be crossed in a few days by new, powerful means, not in fragile vessels, but on indestructible floats, or floating islands, without danger, in all comforts and ease.

Americans! this is the course you have to take, and

your unparalleled glory and dominion over the world is a decided matter.

This course is in accordance with the proceedings you have followed hitherto. It is quite natural to your situation, to your constitution and laws. Congress grant tracts of land to societies which undertake the cultivation of the grape, or of the silkworm, or of some produces that may add to the benefit of the community at large; and the same grant patents for inventions and improvements: our constitution requires to do so, because it behoves to an enlightened nation to encourage whatever tends to the improvement of the human condition, in physical, moral, and intellectual respects. Nothing else is required now, for inducing people of our own and foreign countries to apply the proposed means for changing your barren forests into gardens of delight and superabundance. Millions and tens of millions will, and must, emigrate from distressed Europe within a few years. The knowledge of the proposed means, the first and simplest experiments, in their application will powerfully excite the minds, and facilitate emigration, and settling in wildernesses, in a degree unexperienced yet. It is nothing but your liberal institutions, that may attract the tide of emigrants from Europe to your country, in preference to others. The American country is extensive, and very thinly inhabited. The middle and southern parts afford superior climates, and are not inferior to the United States in any other respect, except in their progress of civilisation and institutions. Hitherto emigrants and new settlers had to encounter many dangers, hardships, and difficulties, and a great

part of them fell victims to their enterprising spirit. They had to undergo hard labour, to cut the trees with the axe, to unroot the brushes with the hoe, to remove and destroy the massy piles of timber and brushes, to work with the spade and the plough, to reap with the sickle and scythe, &c. &c.; they had to pay the work of beasts for draught dearly, by raising large crops for their food, with hard toil; they had no other prospects for many years, but continual hard labour; the hopes of acquiring gradually an independent situation, and improvement of their condition, could only induce them to set about for such arduous task. But how many have been sadly disappointed in their fond hopes?—Sickness and premature death, in consequence of unwholesome exhalations of putrid swamps, or decaying vegetables in their neighbourhood, of being compelled to expose their bodies to all the bad influences of wet, heat, and cold,—of improper food, over-exertions of their bodily strength,—have but too frequently been the rewards for their laudable enterprises. Look at the western population in the backwoods!—The emaciated pale faces of the greatest part, especially in summer, exhibit the enfeebled state of their health.

But, suppose extensive tracts of land, cleared at once from their spontaneous growth, that kept the soil in perpetual shade, the rivers and creeks confined in properly narrowed channels by dams, the swamps drained by ditches, or filled up, the decaying vegetables removed, the soil in this state exposed to the rays of the sun for one or more years; suppose such an improvement to be, not for some hundreds of acres,

as you find them now at most, but for ten, twenty, or more miles in diameter—and you will have a climate as fine and healthy as any where on the globe may be found under equal latitude. This can be effected, without human labour, within one year, by one of the most simple means of my proposals. Render such improvements of land any where in our western countries accessible to the poor as well as to the rich, which may be done to the greatest benefits for the nation, for the owners of the ground, and for the settlers themselves; and your wildernesses will soon be thronged with inhabitants, feeling themselves happier than ever a people was. Your hideous wilderness, that is now but the habitation of brutes, and venomous or loathsome vermin, and a few scattered miserable Indians, will rapidly become the delightful abodes of happy, intelligent, human beings. By a simple application of the new means, the soil so prepared, will be covered with luxuriant growth of all desirable vegetables that the climate admits of, the finest gardens, extending many miles in every direction, in beautiful arrangement and symmetry, will at once appear. Snakes, mosquitoes, and other troublesome vermin will have disappeared, the causes of their existence being annihilated. These first great things may be effected by the superintendence of two or four men, at the rate of several hundred acres per day!

The next objects to be created are those buildings which the proposed means afford. It would be folly itself to live in buildings of our present make, which require now so much ado, and are, after all, compara-

tively speaking, but poor contrivances. People may then please their own fancy, and adapt the buildings to their utmost wishes, without working, or troubling themselves, and without expenses of account.

Next to the habitations in all the devised novel splendour, and enjoyments, and comforts, come the furnitures, garments, and dresses into consideration; and establishments for the productions of the proposed kind, are to be created and put into operation.

It will readily be conceived, that not every community needs an establishment for composing and constructing the materials for buildings, and other commodities, furnitures, machineries, dress, &c.; but one establishment of the kind is sufficient for many communities, after roads and means for transporting great weights are established.

Next to this, floating islands, constructed of the materials which the present spontaneous growth of timber chiefly afford, for crossing the ocean at the rate of 1000 miles in twenty-four hours. These large floats, covered with earth and buildings, propelled by mighty engines, that the powers of the motions of the ocean, the wind, and the heat of the sun, at once may operate upon, will be used for carrying the surplus of productions to distant markets, and taking in return the surplus of foreign climates, and thousands of emigrating families, for settling in the new prepared country.

These emigrations and new settlements must, in the progress of the new means, become cheaper and cheaper, and soon be almost of no expenses at all to

the undertakers, while they yield uncalculable benefits to the same, to the nation, and the settlers.

It is incumbent to the government of the United States to take the lead of these great events, and it will have to make some arrangement. If the government understands the interest of the nation, it cannot help affording every facility and encouragement to new-comers from the old country; for their settling is an increase of the nation, and even more valuable than any conquest in foreign countries. It will require but little additions to the present provisions of laws for peopling the uninhabited regions of the United States. What the most beneficial arrangements are to be, will immediately be suggested by the nature of the means, and the advantages to be derived from a great population. Sound policy will permit emigration as long as there is any good to be derived for the nation; and this is the case as long as there is room enough for producing the sufficient necessaries and comforts for the whole population. This policy must not only not throw no impediment in the way of emigrating and settling; but it must also facilitate the same, and make all the arrangements the new means afford. These arrangements consist but in increasing the simple machineries as proposed; and these machineries are of such materials as will cost little or nothing; the converting of the raw materials into the machineries and buildings, and the other articles for the use of men cost nothing.

The immediate effect of the application of the new means will be, that all what now constitutes wealth

will lose its value. So what is at present called wealth will be of no consideration. The emigrants from foreign countries need not to have property; and if they have, it will be of little use. For what benefit could they derive from it here, when the new means are in application?—The means for their transport, floating islands on sea, and large vehicles on adapted roads by land, are made by machineries that cost nothing; they are propelled by powers that cost nothing, and conducted by men whose labour is not required; who live thereon at pleasure, and may cost nothing, or an insignificant trifle at most. The soil is prepared by machineries, the buildings are erected, the articles of use and comfort are made, by machineries that cost nothing. So the emigrants may find every thing prepared for reception; they have but to take possession, learn to superintend the new establishments, and continue to improve their happy situation. In return for these great benefits, which could now not be bought by any wealth, they have only to enlarge their establishments, their cultivation of soil, their buildings &c., to multiply new establishments for other new settlers, to extend the roads and other improvements, for the general benefit of the nation, by their increasing means and machineries, which will cost nothing but the superintendence of a small portion of themselves. This is the proceeding of all emigrants. Their actual property will then be of no account. The whole arrangements will then consist in making contracts with the emigrants for paying their new possessions created in that matter as mentioned, by making certain other establishments of the same kind, roads, dams, floats,

and other new improvements, within a certain time, by their new means. This requires no labour on their part, and no wealth, but only some pleasant attention and occupation, by turn, among themselves. Their property of the present kinds, if they had any, could effect nothing in all these new purposes, and would be, at most, but a trifling addition. All wants are to be supplied by the productions of the means, or by the exchange of surplus with that of foreign climates. All this is to be effected in a general way, without expenses of individuals. All artificial productions of our present time can then have but very little, or no intrinsic value, they being superseded by other productions, that cost nothing. So whatever can be bought with money now, will have no value. If the artificial products should be of any use at all, it must be to place some of them into the museum, merely to preserve them for after ages: they may then excite curiosity, as specimens of our present industry; they may then truly excite wonder at the great pains we have taken for producing so few little things and small toys, nearly in the same manner as when we behold in a museum now the curious trifles of savages.

Therefore, it is not what we call now wealth, but the number of human individuals and intelligence, in which you will have to look for the increase of national wealth, and power, and influence.

Thus, without a combined system of arrangements, but merely by contracts, that require no sacrifice from the nation on one side, and neither wealth nor exertion from the setlers on the other side, a new and infinitely happier state of things than any conceived yet, may be

effected in our country, and gradually in the whole world, without any violence; for one community, or settlement, will always provide for a number of others to come after them; then every one of these has to do the same for others to succeed, and so forth. Suppose, for instance, a community should finish in one year nine establishments, with buildings and the finest gardens sufficient for at least 1000 individuals each, it would then require no more than, at most, ten men's continual employment; and if the community have 500 adults proper for it, it would require, out of fifty days, one for attendance of every one. So every community may increase, without exertion or tedious occupation of any human being, but in a play-like manner, to ten communities, provided with the most sumptuous habitations and gardens, and every thing desirable. The communities would thus increase in the progression,—1, 10, 100, 1000, 10,000, 100,000, &c. Supposing every community to be of 1000 individuals, the sixth succession would amount to 100 millions of men, with completed establishments of the new purposed kind. At the supposed rate, in six years the whole European population might be provided for in the stated manner.

Thus your country may soon be densely populated, and a continual garden from the Atlantic to the Pacific Ocean, filled with all that is delightful to man; with palaces, and roads with locomotive conveniences, in every direction for travelling, within two or three days, from one extremity of the United States to the other, from the Atlantic to the Pacific Ocean. Many

great things, not thought of yet, will then be immediately executed. You will acquire rapidly the means for effecting in one year more than hitherto could be done in thousands of years, by the densest population.

Your government will then have to pursue objects widely different from what they are now, and of a far greater extent, and of a superior kind. Your system of society will be far less complicated. There will be no tax-gathering, no occasion for complicated laws for the protection of private property. Your military power will be of a nature quite different from what it is now. Other means, other powers are at your disposal; and prudence will compel you to keep your superiority in power over other nations safe, by a due regard to the application of the new means.

Your present constitution is sufficient for the new order of things; and it is the most favourable for populating your country to the greatest general happiness of the inhabitants.

You may lay out your wilderness into convenient districts of moderate extent: every district will rise into an independent state, as soon as its population will amount to 50,000 individuals; and may then make its own laws. Thus people who are assimilated in language, dialects, manners, and customs, may unite themselves at their emigration and settling for the same district, until they are numerous enough to form a state.

Thus your wilderness, now not of the least use to you, may be, within ten years, filled with intelligent inhabitants of many different tongues, in separate

states, uniting with you under your wise constitution into one great nation, and keeping in awe the rest of the world.

Your objects will then be, to have effected, with your gigantic means, every thing that may contribute to the convenience and happiness of the inhabitants, and to render your whole country a paradise as much as possible.

Not only wealth and physical means for the general benefit, but chiefly increase and diffusion of useful knowledges and intelligence throughout the whole population will then be the objects of your government. For you and your new settlers will then be no more slaves to labour; there will be no poor rapacious being in human shape, that must be kept by compulsive means and dread in submission; for whatever man sees there, he may freely partake of, without trouble or pay. They will be all wealthy, and a great deal wealthier than the wealthiest among you now. So there will be no object of robbery and cheat. Men have then time to receive instruction, to pursue the road towards the increase of their intelligence; they may do it without exertions: for real knowledges require but observation; and this is always excited in placing the things themselves before the eyes of men, who are naturally too curious, as not to observe whatever strikes their minds. This is all what will be required: and you will be under no limit of wealth to effect it. Thus it is, that the most intelligent class among you may spread intelligence (knowledge of real things) through the mass of men, by proper institutions for education and public instruction, by museums, &c.;

and ignorance and its offspring, superstition, will be dispelled without other efforts, like mist is dispelled by the rays of the sun.

Besides your own benefits, that must result in the highest degree of happiness that your nature be capable to enjoy, and of which you can have at present no perfect idea, look at the great, fortunate effect that you will produce upon other peoples! Europe is fraught with bloody revolutions and wars: you will cause outlets to its dense, distressed population, and save thereby great bloodsheds. The slaves in your country will cease to be slaves, without any effort, without any new law, without any loss to their masters; for the new mechanical means will supersede their employment: there will be no use for slaves any longer to any purpose; they will be of no value whatever to their masters; they will have no occasion for them. You may then easily dispose of this unfortunate race of men in the manner you please: send them to some distant part of the world, if you think proper; colonize them, make them as happy as they can be, and make some amends for the grievous wrongs they have suffered in this country.

While you are sending away this race for your own benefit, you may fill your country with the most civilized and most intelligent part of the European population. The sciences and arts which tend to the improvement of the human condition, in physical and intellectual respects, will then flourish in your land and be diffused, not merely among a small, fortunate class of men, as hitherto, but throughout the mass of the people, who are no more under the ignominious yoke

of hard labour for their subsistence ; but who will then have leisure and means in plenty for the cultivation of their minds. Europe is almost overstocked with men of learning, so that the greatest part of them have to take recourse to meaner employments for their subsistence, and who would find themselves very happy in employments suitable to their talents and knowledges, being provided with plenty of every thing to their reasonable wishes, in a situation of all the refinements of human enjoyments and social pleasures, abounding with means for study and investigation in their respective branches of useful learning. Present them such situation, that will cost you nothing, and you will see thousands of teachers emigrating, and many of the most eminent acquirements.

Thus your nation will rapidly increase, not merely in bulk, but with intelligent people of all civilized nations. Such will be your glorious conquests : you will conquer the minds of the most intelligent part of mankind, without fire and sword, but by your superior institutions and geographical advantages, and by your means for general human happiness ; they will come to you, and join you, not as mean subjects, but as brethren and sisters. Humanity, mutual benevolence, will no longer be stifled by mean, sordid avarice, the necessary consequence of want, and fear of want. They will enjoy their lives in your new, happy land : its products will be as cheap and as free as air and water ; for they will require no longer the human exertions. In return for these benefits, you may reap the advantages of their knowledges, and thus gradually increase and diffuse intelligence throughout the nation.

Is this, perhaps, but a dream?—Europe will be approached to you within three or four days' journey. Your powerful floating islands will rapidly increase at your coasts to the east and west. Your immense forests will, without labour or expense, be quickly converted into large, massy floats of convenient timber: they may carry away from Europe millions of men within a few weeks. No power can prevent them from so doing. There is no danger, no tedious journey, no expense, no inconvenience, no hardship on these floats, no uncertainty in speed, no fear of attack; they may be rendered impregnable fortresses. Where should then be the reason to deem the exhibited idea a dream?—The powers are immense, of no expense, the means for their application to such effects simple without expense!—No—ignorance and prejudice only may deem such things impossible, because they never reasoned—but I appeal to reason. Should this, my appeal, be in vain among you, what then?—Why, the effect will, and must then turn against you. What would become of your nation, if the same means should be turned against you from populous Europe? Neither your distance, nor your extensive woods, nor your gunpowder, could protect you against the means that these powers afford.—Look to this while it is time!

Henceforth it is no more the strength of the human arm, or the number of men, nor personal courage and bravery, nor the talents of military commanders, nor the advantages of geographical situations, that give power to a nation, but it is intelligence (knowledge of useful things). Those who will not advance with the progress of the time, but who pride themselves in

adhering blindly to old notions, are like crazy men, who would run with their eyes shut: both must get hurt.

Our present time has brought forth the knowledge of new things; is it wise for any man to slight them, under any pretence whatever?

Europe will almost come into contact with America, within three days' journey!—It depends now from you whether you will take advantage of this approach, or give it away. If you take it in time, you will have it for ever;—if you leave the chance to other nations before you, you will have lost it for ever: for what could you do against an inundation of armies with new kinds of weapons, against which you are defenceless—with migrations of millions, headed by irresistible engines and foreign despots?

The powers and means presented to you here may prove, in the hands of barbarity, a curse, a slavery of nations, and in the hands of intelligence, the greatest blessings for mankind.

There is yet another danger to be apprehended, if these means should be left to chance, without some social arrangement. Man's labour will lose all value; there will be no demand for it; things will become cheaper and cheaper: but wherewith shall the labouring class buy, if they have nothing to pay with? Violences will be consequences of necessity, and the end hurtful on all sides; therefore, some social arrangements are to be made for preventing bad consequences; and it is rational to introduce the most proper system for applying these discoveries to the

greatest benefit that can be derived from them, before it is too late.

A new state of society, a new constitution of state, entirely different from any extant, without, however, being in contradiction with the constitution of the United States, is to be inseparable from the general practice of the new means.

What this new state of society, this new constitution of state, is to be, will the necessary effects of the practice of these means suggest of themselves. The new state of society, the new institutions and laws, are to be far less artificial and less complicated, than they are at present. What perplexity is there now in raising taxes, in enacting and applying laws for the protection of persons and property! How frequently is it not a matter of the greatest sagacity and historical knowledges of juridicial decisions, and the most subtle scrutiny, to discern right from wrong, even in the most important cases! What volumes of laws, and decisions of courts, are not often to be searched and consulted for instruction in law cases! Old laws of times which we now call barbarous and superstitious, even of Old England and the ancient Roman Empire, are often to be the guides in this country, contradictory as they be among themselves and to a more enlightened age; and how little good ensues very often from their application! How scanty are the provisions of public institutions for the general weal, for want of means!

How different must be the new state of things?—All the physical wants are supplied abundantly, in a general way, without manual labour. A small com-

pensation, at most, is perhaps for a time required from the receivers of the benefits; which may consist in a few days' superintendence of machinery in twelve months, of every one, by rotation. It will not more be the business of the individual to provide for himself; but it will be the concern of the state or community to provide with a sufficient store of every thing necessary or desirable for all its members. For the produces of the soil, and their preparation for food and use are the objects of general establishments, that require no labour and no further expense. The surplus of the productions are to be applied to furnish, by exchange, the articles wanted from foreign climates. This again is to be done, not by small conveyances of individuals, but by new means of transport, of great powers, and the superintendence of but a few men, which are adequate to do the commercial or exchanging business for many communities, or a whole state at once. The exchanged articles, again, are the property of the community at large, and to be applied or distributed according to individual wants, so as to afford equal benefits to all members. Extraordinary desires of individuals may be satisfied thereby, by giving timely notice of it, provided the objects be not out of reason.

Thus all the articles of food, of dress, of commodity, of fancy, of pleasure, of instruction, &c., the habitations, the use of the gardens and pleasure-grounds, all the social pleasures and benefits imaginable, are *gratis*, to be had by every member of the community.

In like manner are the state's concerns relative to the communities to be conducted Many communities,

form a state. The state has to provide for general establishments concerning the whole state, inasmuch as they need not be in every community. For instance, means of rapid and easy communication, roads, large convenient vehicles on land, and large floats, or floating islands on sea, canals, mines, and any other improvement for the benefit of the state, are to be the objects of the state's government, composed of deputies or representatives of the communities. All such affairs, again, require no contributions of individuals; but the powers and means of the proposals are to be properly applied for effecting the general state's purposes.

Thus, whatever may be wanted for the general welfare of the state, for the highest improvement of men, in physical, intellectual, and moral respects, is the affair of the state, and obtainable, if it can be found or produced any where on the globe, without tax-gathering, without sacrifice of any individual in the state.

Means of protection may be in the hands of every single state, under the direction, however, of the whole Union, in cases of general interest.

This is the simple mode that will lead directly to the creation and full enjoyment of a paradise such as is pointed out in the first part; and this is accessible to all, to the inhabitants of our own country, and to the emigrants from foreign nations, without hurtful disturbance, or any violence, or loss to any individual.

Where are such new communities and states first to be founded?—

Evidently, the most conveniently, in our best parts west of the Mississippi.

To give a clear conception of the proceeding towards accomplishing these purposes, from the beginning, gradual progress, to the ultimate result of the practice of the proposed means, I shall trace a distinct image for the consideration of reflecting men, as a natural deduction from what has been stated.

I shall first state, how a community is to be formed and governed, so as to produce the possible greatest benefit for every individual; and next to this, the formation of the state, and general government.

The beginning and progress of the new state of things may be divided into periods: each subsequent period will produce new means; and therefore is each period to be distinctly considered by itself. These periods are the following:—

First period. An association of an unlimited number of members is to be formed, for the purpose of spreading the knowledge of these means throughout the country, and inviting the attention of the public to the subject; proposing meetings in convenient places, for further examination and deliberation, and causing a subscription of small shares for the first experiment, on a sufficiently large scale, so as to be of utility. A mathematical examination of the invention to be applied is then to be made, and all its details to be investigated, so as to ensure success, and establish general conviction, before any money is to be expended. After the funds to be employed are ascertained, the simplest experiment is first to be made. Cultivation of soil being the most important object, and in the same time practicable, in certain circumstances, with the least expense, the first experiment

may be confined to it. For this purpose, the most convenient spot is to be selected, so as to subject it to the possible least expenses. A piece of level ground, without requiring a purchase for this purpose, of 100 acres at least, or of several hundred acres, somewhere near the Atlantic coast, is eligible. There the proper arrangements are to be made, under the direction of a commission, chosen by the majority of the association, by ballots; with sufficient security for any money or other valuable property to be trusted into their hands, and provided with well-defined instruction.

The result of the progress of this first experiment is to be published throughout the association in fixed periods, so as to afford perfect knowledge of it to every member. This may be done by printed reports. After this experiment has realized the expectations, it is to be published in America and Europe.

Second period. Arrangements are then to be made to extend the application of the proposed means. And though it be confined at first to mere cultivation of soil, the same means being adapted for all works of excavating or elevating earth, it will be in the power of the association to make contracts with the government of the United States, highly advantageous both to the nation and association, for general improvements of various kinds. The payment for them may be taken chiefly in lands of Congress, at the usual rate. Patents for the new inventions to be applied may be obtained for the association, in order to prevent private speculators from using the new means to the prejudice of the labouring class of the people.

This protection of the association being no more than what the constitution and laws of the United States grant for new inventions and discoveries, intended for the benefit of the community at large, there is no reason to apprehend a refusal of this lawful protection ; on condition, however, that any individual is accessible to the association, by paying a share, which may be done in cash, or in work for the purpose of the association ; so that even the poorest may have access to the enjoyment of the full benefit of the new means, whenever he choses. The work to be done for the association consists in constructing the first machineries, the first moulds for moulding, in transporting materials and men, and finally in superintending established machineries, as mentioned.

After the first experiment is made, the means for extending the application of the new inventions will rapidly increase ; for the moderate shares to be paid, and the certainty of great gain, will induce the people to join the association.

It will then soon become a matter of necessity to make great arrangements for extensive new settlements by means of the new inventions. While the association may thus acquire large tracts of uncultivated land in the west by contracts with Congress, for forming new settlements, it may, in the same time, make contracts with owners of land in the eastern states for the application of the new means, increasing thereby their body and collective wealth.

The contracts with the landowners are to be made in such a manner, that many farms adjoining each other are cultivated by one single establishment under

the superintendence of a few individuals, engaged by the association; so that many thousand acres are to be transformed into the finest gardens imaginable, and yielding, consequently, far richer crops on the same area than hitherto was possible. The compensation for such culture and preparation of produces for food and use to be made by the owner of the ground, is to be a certain stipulated share of the produces.

Thus the farmer will see his farm changed into the finest garden, with produces ten times as great and as valuable as he could derive hitherto therefrom; he will have a store of produces, for his own use and for sale, without trouble, without expense. He may then spend his time in the manner he pleases: no work, no hiring of labourers, nor feeding of horses or oxen for work, is any more required of him. Dwellings and store-houses are to be built for him by the new means. The surplus of his produces may be transported over land and sea by new means of transport, through the agency of the association.

The association will have an affluence of real wealth in this way, that will soon enable it to accomplish the greatest purposes imaginable, by the new means. An immense surplus of necessaries and comforts of life will be created thereby for the association and single farmers, which is to be exported on floating islands, to supply whole nations in all quarters of the globe with them, in exchange for produces of their own.

Wealth begets wealth; and it will thus soon become so superabundant, that all avarice, or fear of want, will cease, and all real wants of human life will be so cheap, or so free, as air and water is now. All

this will be thus effected without any hurtful consequence or violent revolution. The most stupid and most inveterate prejudices, and blind adherence to customs, will see themselves defeated without combat; the change will gradually be from good to better. The poor class, the mechanic, and all others depending now on their labour, will see the plain road to the increase of their happiness without trouble. They have only to pay a small share in money or work, and then be members of the association, and sharers in all the benefits resulting from the application of the new means. They may emigrate to the west of our country, if they choose; and enjoy, after a period of two to five years, a paradise without labour. The wealthy may take at once a large share in the application of the new means, and satisfy his desires for wealth to their utmost.

The contracts with Congress may be made in the following way, for deriving from the new means the greatest benefits for both parties.

The association may select lands wherever they choose beyond the Mississippi, among Congress lands, within a certain period, say within ten years, which is then to be their property, provided they pay a certain price, stipulated by Congress, within the same time. The payment may be made by preparing a certain tract of land for Congress; for example, one-fourth of the land so bought by the association for the reception of new settlers; such land, with all the improvements the new means afford thereon, is to be the property of the Congress: these improvements will chiefly consist in the finest gardens, edifices of the described

kind, &c.; or an equivalent may be effected, by making rail-roads of a superior kind, for large locomotive engines, large floats with engines for transport on sea, canals, draining swamps,. making dams along rivers, or other improvements or establishments for the general benefit of the nation.

Thus the nation will have acquired, in less than ten years, improvements which could not have been effected in 10,000 years with all the money in the world. For there will be level roads, consisting of large tables, many feet thick, and hard as flint, in every direction, from one extremity of the United States to the other, with vehicles for transporting many thousand tons at once, and travelling 1000 miles per day; to cross the ocean, at the same rate, on beautiful floating islands, with perfect security and in all imaginable enjoyments and comforts. The immense wildernesses beyond the Mississippi will be changed into gardens with produces of incalculable value, and filled with establishments for producing things in far greater quantity and of greater value than all the world can produce now: and all such improvements will be at the disposal of the government.

The increase of the funds and members of the association are to be applied to increase the settlements.

Third period. It will then be time to make proper arrangements for settling the territories beyond the Mississippi in the most beneficial mode.

It is evident, from what has been stated of the new means, that the inhabitants of the new country need

not to dwell in separate houses by families, as hitherto has been the case. The half of the advantages of the new means would thus be lost, besides the inducements to a more refined social life.

Although it is not necessary that the new means be applied in their full extent at once, yet preparations ought to be made, so that they *can* come to full application as soon as desired, or as practicable. When I say here *practicable*, it is not to be understood with respect to the means themselves, for these *are* practicable at the beginning as well as at any later time; but the expression is made in regard to the prejudices of men. I am aware, as well as any person in the world can be, that prejudices are the great stumbling-block, which by far the majority of men cannot get over, except, perhaps, gradually by length of time. The most evident truths cannot find easily access into the mind where prejudices of customs are lodged; for to substitute old errors by new truths requires reflection, and believing in old notions is more commodious to weak or lazy minds. Therefore, I am willing to be accommodating, as much as it be in any way compatible with the ultimate attainment of the great purposes in view, that is, to afford as much happiness to men as possible. I hope I shall have accommodated the proposals to the most common notions, in beginning with the simplest contrivance.

The new settlements are to be laid out so as to admit of forming communities at any time desired These communities ought not to be smaller, nor larger, than, for the greatest conveniences and the best purposes, is stated in the first part; that is, than a building

of one-sixteenth of one square mile can contain in the utmost convenience, with the greatest saving of trouble, and the greatest sum of enjoyments and pleasures. The number of individuals ought, therefore, to be not less than 1000, and never more than 3000 for one community. This number might, by the most superior culture of soil, require not more than from one to three square miles of surface. But as land is now cheap, a square of five miles, or twenty-five square miles, may be allowed for every such community, without causing too great and inconvenient a distance between the first establishments. In this way 100 communities might form a state, whose area would then be 2500 square miles, or equal to a square of fifty miles. Such a state might afford superabundance of every thing for human happiness for a population of 2,500,000 individuals, calculating 1000 for every square mile. And how many states could not be formed in this way within the territory of the United States!

The tracts along the coasts of the ocean will be always the most advantageous, for reasons that have been stated in the part: these reasons are; viz.—

1. Because there the four different powers of wind, tide, waves, and sun-shine, are at the disposal of the inhabitants, and therefore so much the greater things to be effected.

2. Because the productions of sea and land may be enjoyed there at once.

3. Because the transport on floating islands, and their cultivation of soil, afford peculiarly immediate great advantages.

4. Because the atmosphere is there generally milder and more salubrious.

Hence the shores of the Pacific Ocean might be eligible in the west at first.

These general principles are to regulate all general cases concerning the settling of emigrants in the new country.

The next object is the government. Its nature is to be far superior to what it can now be. It will no more be a mere compulsive tax-gathering and tax-expending power: the well-being of the society in general, and of every individual in particular, will be no more a mere pious wish, praised in poetical songs and declamation, but it will then be the sole business of governing; and the government will be no more confined in physical means, but their intellectual capacities will only come into question. There will be leisure for reflection, and divesting themselves by degrees of the remaining old narrow conceptions and prejudices, and for maturing good regulations. The business of governing, though of great extent, will be very simple, every thing being regulated and provided for in a general way. Every community takes care of its members; and the state's government is composed of deputies or representatives of the communities. There are then but two governments,—the special government of each community, and the general government of the state.

The government of the community may be constituted in the following manner:—

1. A committee of provisions.
2. A committee of health.

3. A committee of instruction.
4. A committee of pleasures.
5. A committee of police.

The function of each committee is equally important, and each requires peculiar talents and dispositions.

The committee of provisions is to have the management of all husbandry, the cultivation of soil, the gathering and the preparations of its produces for food and use; the kitchen department, the exchange of surplus against things from foreign parts, and the inspection of the stores.

The committee of health has under its care the medical department, the provision of all medicaments, physicians, the removal of all things injurious to health, excessive use of spirits, intemperance of any kind, filth, stagnant waters, decaying substances, bad food, unwholesome practices, the care of meliorating and purifying the air and water, washing, cleaning, selecting the diet for those whose state of health wants a particular care, &c.; in short, providing for every thing that may promote health, and preventing and discarding whatever may be injurious to health.

The committee of instruction provides for every thing relative to education and instruction for children and adults. They furnish all materials and teachers for instruction, and have the superintendence of all the business concerning the same. Libraries, laboratories, museums, botanical gardens, schools, proper attendance to infants and children, are objects of their function.

The committee of pleasures takes care of all matters of amusements and enjoyments. The arrangements

for public pleasures, theatre, music, balls, bodily exercises of diversion, all arrangements for social conversation and amusements are of their resort; also the inspection over all the festivities and public amusements, preventing and removing all indecencies and interruptions of public pleasures, and furnishing all requisite materials and persons for such purposes.

The committee of police has to watch on good order and public security, also to guard against infractions of regulations made for the prevention of any wrong. It is to be the first juridical instance in all complaints brought before them; it has to provide for travellers passing through the community, and visitants; and has under its care every thing that concerns personal safety against accident or malice.

Every committee is to have a president, who has to make a report, at every certain period and extraordinary occasion, to the community, in their meetings, of all the intermediate transactions, also of all proposals of the committees, and to receive instruction from the community.

The community is to hold public meetings at certain periods, for instance, every week; every adult member is to have a vote in it at a certain age, for instance, at eighteen years. The communal meetings are the second instances in all controversial matters, where the committee in its respective department is the first instance. Majority decides in all cases, after every member of the meeting has fully expressed his opinion.

There is no other authority in the community besides these five committees, who are the special officers in all the individual and communal concerns.

Every community sends one or more deputies to every assembly of the state, with proper instructions of their wishes, decided by the majority of the same, to be discussed in the general assembly. The state's assembly is the last instance of appeal, which the respective deputy has to bring before them.

The communication between the state's assembly and the community is to be made through the communal president to the state's president or governor.

The general assembly appoints five state's committees, in the way as every community does for the five respective communal departments, to execute the orders of the state's assembly, to be received through the state's president, for their respective department of the state. These five state's committees bear the same relation to the state as the communal committees do to the community.

All adult female persons may organize themselves in the same manner, as separate councils, but depending in matters concerning both sexes on the final decision of the male assemblies. Why should the female part of men be excluded from all public councils?—Have they less sense, less feeling, or less interests in the human concerns than the male sex?—In a state of society where only physical strength is to govern, and mental culture is esteemed to be of inferior merit, and where generally the female sex receives an inferior education, and where equality of right is not understood, there may be some apology for this despotism; but in a better enlightened and happier state, such barbarities will, of course, subside.

All authorities of the state are to be included in the general assembly and the five state's committees.

The general assembly and the state's committees are to have no right to interfere with communal concerns, but they have to aid such arrangements by their general functions.

The state's committee of provisions has the special care of all the stores of provisions of the state, to supply them by general establishments, be it from the inland or from foreign countries; to manage all concerns of exchange of the communal surpluses delivered into the general stores against the foreign articles wanted; to balance the mutual exchanges between different communities of the state; to provide for means of transport on land and sea, large vehicles on artificial roads, and large floats on sea; to establish factorships in foreign countries for effecting exchanges of whatever be wanted in the state. Every community has to apply to the state's president for any desired exchange, and he has to correspond with the state's committee.

The state's committee of health has to provide for every thing wanted by the communal committees of health; to investigate every thing that may improve the state of health in general; to receive the reports and proposals from physicians, in order to effect what is of its function; to meliorate the climate of the country or any part of it, wherever it can be done, as by draining swamps, confining rivers, clearing the ground from noxious evaporations of decaying vegetables, &c.

The state's committee of instruction has to provide for every thing relative to education, arts and sciences, schools, universities, libraries, collections of instructive

things; to teachers, their studies, examen, productions, and effects, for the correspondence with foreign men of learning, printing establishments, &c.

The state's committee of pleasures has to provide for every thing wanted of the communities for such purposes, for general festivities, general establishments for forming artists of all kinds, for social amusements and instruction, such as musicians, actors, dancers, &c., and all materials for innocent amusements, and to take care that none of bad consequences be introduced.

The state's committee of police has under its care all roads, canals, rivers, lakes, &c., the vehicles to be used on them, the post, the telegraphical institutions, and every thing relative to the general public order and security, the provision for emigrants and immigrants, travellers in the state, all state's buildings and establishments for the use of the state's government, all publications and correspondence of state's transactions, for newspapers, and public information of any kind, also the special examinations of all juridical matters for report to the general assembly.

Every state's committee is subject to the general assembly, and has to give account of all their transactions to the same at fixed periods, and receive their instructions from the same, to report of all the results of inquiries made by them, and make their proposals on all subjects concerning its respective department.

Every communal committee has, through its communal president, to make its application to the state's president on any subject of its respective department.

Every adult member has to give a list of the articles wanted for his special use, at fixed periods, to the com-

munal president; for which articles the respective communal committees have to provide through the state's president, provided the desired articles do not exceed the individual's share in the communal stores, in which case the list is to be returned, with instruction how much its value is to be lowered.

Thus every individual's want of any kind may be supplied throughout the state, without any traffic, without money, without labour or trouble; and all the most excellent arrangements and establishments that the new means afford, may be speedily made in a most regular way, which prevents all collisions and injustices.

The business of the communal and state's committees is simple, and will require but a few hours' time every week; for the wants are not individually, but in a general way, supplied. The communal stores are to be filled in consequence of the various desires of every individual, which are to be notified at fixed periods; for instance, every three months, previous to the communal purchase or exchange of surplus: in consequence of these individual lists, the communal committees have to make their periodical reports to the respective state's committees, through the communal and state's president, and *vice versa*.

The whole business consists then only in making a list of the articles desired by every member; then in making a list for the community out of individual ones, and according to communal resolutions by the communal committees; then in making a list for the whole state by the state's committees out of the communal lists, and in conformity with the resolutions of

the general assembly. These individual, communal, and state's lists are not oftener to be made than every three months, but once. All this will consequently be but a pleasant occupation, because there is no complicated tedious money and book-keeping affairs. The wants of individuals, communities, and state, are exhibited at one glance, and provided for in the most general ways. Large vehicles for carrying thousands of tons by land and water, under the direction of two or four men, transport the things of exchange in the most rapid and regular way for the whole state, and distribute the same, according to the directions of the respective authorities of the state, among the communities, from whence they receive in return the surplus productions for gathering and exporting them. What now would require the attendance and industry of many thousands and myriads of men, will thus be the slight task of a few men.

Thus the individual, communal, and state's concerns are regulated without opposite interests; the strictest justice is done to every one, not by punishments for offences, but by preventing all disputes and supplying all wants; humanity and love is fostered, not by empty words, but in deed; the sense and taste for instruction and refined pleasure will be awakened and satisfied in turns; the intemperance of all kinds be prevented, and finer innocent enjoyments and pleasures fill up the time. A paradise will be accomplished then in a

Fourth period.

After the state is constituted and organized, and there is cultivated land sufficient to the wants of the

inhabitants, they may then avail themselves of the full benefits to be derived from the new means.

The means of transport are then to be the first objects. Artificial roads of vitrified substance and iron rails, with establishments and vehicles for moving large buildings, with weights of many thousand tons for the inland communication; and floating islands of trees and light stuff, that is prepared of any kind of wood, and cast and baked in large masses, for transport over sea, are to be made.

Next to the means of transport, one establishment, sufficient for the whole state, for forming and vitrifying, out of the most proper materials to be found, parts of the edifices, such as columns, pillars, entire walls, tables, vaultings, and all other requisites for the buildings, colonnades, walks, canals, aqueducts, architectural ornaments, vessels, utensils, pipes, pieces for machineries, for burning mirrors, &c., as described in the first part, by means of burning mirrors and moulds. These articles are to be transported to their respective places, for to erect there the edifices as described.

The objects of fancy and pleasures, of the same or similar substance, are to be made: in short, all things of hard, vitrified substance, as mentioned in the first part, are then to be made in succession of the demands, so that the less necessary articles follow after the more necessary ones.

With this establishment a foundry of iron and other metals, by means of the same burning mirrors, may be united; one for the whole state is more than sufficient,

considering the manner of its use, described in the first part.

In one or two years all possible wants of that kind of the whole state may be supplied, and the most magnificent paradise be accomplished, such as is pointed out in the first part.

Next to this grand object, or simultaneously, another establishment is to be made for making all articles of pliable or soft stuff, for dress and soft furnitures of all kinds, as mentioned in the first part.

Thus there will be but one establishment in every community for cultivating all the circumjacent land; and for the whole state are but two establishments required for supplying all other wants for architecture, machineries, garments, dress, ornaments, furnitures, and every thing wanted. Besides these establishments there is nothing more required than the roads and vehicles for transport, which both are but produces of the single establishment of the whole state.

All the vehicles in the whole state may consist in but a single one; and yet this will be sufficient for moving any number of persons, or any freight within the state to any or every community of the state every day. To understand this, an example may be here specified for illustration.

Suppose the state to be a square of fifty miles, containing 100 communities, five miles distant from each other, so as to form ten rows, each of ten communities, the road passing through every community will then be ten times forty-five (as the length of each row from one centre of each communal square to the other),

that is, 450 miles long; one vehicle will then have time enough for passing through all communities, and loading and unloading, when it may run at the rate of forty miles per hour. It would make no difference as to the distance, if the state were of any other figure with the same number and distances of the communities. One vehicle being large and commodious enough for many thousands of persons and tons at once, it is consequently sufficient for doing all locomotive business for the whole state.

This fourth and last period is the state of a complete paradise, having all the mighty powers and means proposed in practice.

This ultimate happy state can and will be attained within five to ten years from that time hence when the first union is formed for the proposed purposes.

Great are the powers, simple the means for their application, simple the proceedings, and simple the system of society, the whole state a paradise, filled with vast, most convenient, and most magnificent palaces, and gardens, full of enjoyments, delights, pleasures, enrapturing sceneries, rapid communicative and locomotive means throughout the state, without slavery of work, without opposite interests, without traffic, and consequently without rational cause for enmities between man and man. None is molested, every one may live as he please, enjoy the pleasures for which his life is made, and exercise freely all his mental and corporeal faculties, with a sphere of action, more powerful, more extensive, more multifarious than the mightiest monarch on earth was ever known to have

The produce of the country will rapidly increase; the exchange of surplus may buy every thing that can be bought in the world; and the wealth, influence, and power, be spread over all the globe.

New ideas, new desires, new objects of action, new sciences and arts, infinitely superior to what is now in existence, will arise. A new life with superior enjoyments, incomparable to the present, will ensue. The now hidden mysteries of nature will be more and more searched after, and unveiled and applied to the improvement of human life. With horror and disgust we shall then look back on our past life, on our past ignorance, errors, superstition, poverty, helplessness, and miseries; and what we call now civilisation will be stigmatized with the names of folly, barbarity, and only be looked upon as a necessary transitory or intermediate state between the helpless state of savages and the state of perfection, of which the human life be capable in this world.

When one such a state is formed, a total revolution of mankind is then the inevitable consequence. Next to the realization of such a state, the rest of the United States will, of course, follow the example; then successively the other parts of this continent; and finally, by degrees, the other parts of the world: for no people on earth can, nor will, resist to the overwhelming affluence of all necessaries and commodities of life.

But while this revolution is going on, the first state, or states, of the new system of means and society, will have the advantage of buying and gathering all desirable and saleable things of the world for them-

selves; for they can create as much surplus of their productions as they please, and buy with all things they want from other parts of the world.

Americans! have you read what is stated here, with attention and reflection; and will you hesitate to investigate the subject a little further?

The chance of associating is placed in every one's power. The way of proceeding is shown from the beginning to the end, step by step, for attaining all the infinite blessings promised. And if this way should not be found plain enough, every further explanation required is offered.

You are now before two roads—the only two you can possibly take—one is to examine what is offered to you; the other, to neglect it, and leave it to other peoples. One way is leading you to conviction, to a paradise, to imperishable glory and power, and national independence—the other one may lead to your national annihilation, to your eternal disgrace, to your subjection. The one is the road of intelligence; the other of imbecility. The one will be eagerly pursued by men of active minds; the other will be loitered on by triflers. The one is the road dictated by the spirit of our age; the other by blind adherence to customs inherited from ancient barbarity and ignorance.

If you want to choose the good and glorious road you have to do it now, or your chance may be soon lost for ever.

In the contrary case, other nations or governments will use the offered means for the dominion over you.

It will then depend from your masters, what blessings, or what curse the new means are to bring on you.

What is stated before you, is a combination of all what is the most valuable of the human knowledges of our present advanced time, and cannot be disproved. It is a most serious appeal to the intelligent, self-reflecting part of all the civilized nations of the world; not for amusing triflers. The truths exposed will soon be diffused throughout Europe, and generally acknowledged, like so many other mathematical and physical truths of late are now acknowledged, in spite of what ignorance and old prejudices would say against them. The truths now before you are infinitely more important and useful than any hitherto discovered. Their consequences will end in a total revolution of mankind as soon as they are understood. Whether your nation is to act a superior, or an inferior part, is depending on your present choice.

Americans! it is now in your power to become within ten years a nation to rule the world. Your territory can contain, in all affluence imaginable, from 200 to 300 millions of human individuals, as many as the Chinese empire contains now. It will be filled to such a number from various parts of the world, if you make proper arrangements for their reception, which the new means afford. You have it in your power to receive the most intelligent part out of all nations: this will be your greatest conquest; for intelligence, not mere physical wealth, is henceforth to be your only power and glory. You may cause a migration of nations, unparalleled in history. You may receive them without fear; for you will have the power on

your side. Mighty engines are to be your future arms by land and sea. The government of the Union is to have the exclusive possession of them. Your regulations may preserve all public safety.

It might be objected that such a system of populating our country with foreign peoples at so rapid a rate, would deprive our own increasing posterity of the room to live in our country to their ease and comfort, that would thus perhaps be in part compelled to emigrate and colonize themselves somewhere else.

This appears to be a very rational objection, and ought to be well considered; for it is just as sound a policy for any nation to care first for their own people before they provide for foreigners, as it is to be for individuals to provide for their own families in preference to strangers, whatever humanity might say against it.

It is true, such apprehensions may be once realised. However, care for posterity can humanly be extended only to a certain limit, beyond which human foresight cannot reach. The very measures of care for a remote posterity, by barring our country against emigration, would keep our posterity comparatively weak; while other countries, especially on our continent, would, by emigrations from over-populated Europe, soon acquire a gigantic population and power, that might, in the course of unforeseen events, overwhelm our nation.

Besides this, who knows, whether a remote posterity may not, for the greatest part, care very little for their country, and choose, under circumstances and views of the world very different from ours?

But at all events, the world is large and productive enough, to afford all the means for human happiness for many generations to come of the whole human race, so that within the next 1000 years there is no universal over-population to be feared; and to care for times beyond 1000 years would be folly in man.

The acquisitions attainable by the proposed new means are of so new a kind, so superior to all what is in existence at present, they lead directly to a state of life so vastly different from our present, and to views of human life and the world in general so infinitely superior to those now extant, that there is great reason to fear of their not being fully understood. The world will be quite new to men, and produce quite new conceptions of the world and human life. The world will no longer appear to be the abodes of misery to man, mixed with but a small portion of imperfect happiness. Human life will no longer be what ignorance will have it to be, a probationary state of misery, torments, and affliction; a curse, a prey about which Satan disputes with the Creator; but a paradise, in which man is reconciled with this present state of life, where his feelings and desires are in harmony with nature, with the universe, of which man sees himself and his whole race a part, and not in perpetual conflict with it, and with his fellow-man. Let his expectations about a future state after his death be whatever they may, he will see there is no reason to exclude him from the full enjoyments of his life in this present world, for which his nature is made.

And he will easily conceive that a life of happiness and harmony with his fellow-men; a life in which he fulfils the destiny of his nature, can make him better prepared for a paradise hereafter, than a life of torment and hell.

A comparative view of the common life at present and of that attainable by the new means will show the contrast between both more plainly.

I. IN PHYSICAL RESPECTS:

At present:

Man has to pay for every thing he wants for his life, comfort, or pleasure; because every thing he wants is the product of human labour. So if he has nothing to pay with, the world, with all its delights for man, is a strange place to him, of which he has no part.

The world is a penitentiary to man, in which he is condemned to work for life.

Man is a poor, helpless, trifling being, with all his drudgery; for he spends his whole life in handling some little tool or other ten thousand times, ever again and again in the same way, until his death, for producing some little things, for little use, or none at all.

Man lives in a very narrow world; for it is generally not much larger to him than his workshop or field: the rest of the world is very little or nothing to him, except what he can buy with his money out of it.

By the new means:

Man is at liberty to enjoy whatever the world produces for human life; there is no labour, no pay, but superabundance of every thing that is good for man. He sees there the whole world as his property and friendly home.

The world is a paradise to man, free of all labours, full of endless delights and pleasures.

Man is powerful like a god; at his command he may change the face of the world; he is lord of the gigantic powers of nature, by which he may produce, without labour, in one year, more than before could be done in ten thousand years. He has objects of activity of a never-ending variety, and of ten thousand times greater importance and utility than before.

Man lives continually with thousands of his fellow-men together, in all enjoyments of life; he roves about among an endless variety of amusing, delighting, and instructive objects; in his brilliant, beautiful palace; in his magnificent gardens; in foreign places, countries, and quarters of the globe; in all climates; in beautiful paradisaical floating islands; he may see every other day a new country; he may be to-day in America, to-morrow in the West Indies, the next week in Europe, or Africa, or Asia, or in some island of the Pacific Ocean; receive and impart every day some new intelligence. He sees the world million times greater and more beautiful than it was before to him; every where he is at home, among friends; no pay is asked, no charge is made; he is a welcome guest every where; for he deprives nobody of any thing for

At present:

The world is a very indifferent place to him; for, except what he can eat, drink, or use—and that costs money, and is rather scarce, it is to him but a mass of dirt, with some vermins and weeds on it.

Man is taught, and he feels the truth of it, that this world is a vale of misery, which is to give him a foretaste of hell; to save himself from it, he has to suffer a great deal in the present wicked world.

If man had equal chances with brutes for life, he would attain a proportionate older age. *Quadrupeds* live generally six or seven times as long as their time of full maturity is, before they become decrepid. Man would have to live, accordingly, in an average, six or seven times eighteen to twenty-four years, thats, 110 to 170 years. The patriarchs, it seems, lived to such an age generally. Among those savage peoples which are not refrained from obeying the impulses of their nature, the sextuple period of their maturity, and upwards, seems to be no extraordinary age. Among us, man hardly attains half that age. It is most rational to inquire into the causes of this unnatural general abbreviation of human life; they are, perhaps, not so very occult as might be imagined; and may be

his enjoyment or use, as there is superabundance of every thing; but the guest can only be interesting for what he has to communicate or to exhibit. Novelty can never get exhausted as long as he lives.

Man sees there the whole world full of varying sceneries, to his delight and substantial benefit; for land and water, wherever he treads, is covered with useful and beautiful growth of vegetables, and artificial objects; all arranged in beautiful symmetry, and prospects, to the delight of the eye, taste, feeling, smell, and fancy, in endless variety.

Man sees the world to be a paradise, and may get a foretaste of heaven in it, and so much the better prepared for another paradise hereafter; for nothing will impel there him to forfeit it.

If man, by equal chances with brutes for life, may live to an age of 110 to 170 years, how much may his life still further be prolonged by superior chances for life!

Let us take a glance of the improvements to be made by the proposed means.

There is no cause for compelling man to live worse than brutes, for doing any thing against his inclination, or living in more dirt and impurities than brutes.

He has not only equal chances for life, in every respect, with brutes; but all are superior to those of any brute's life.

The food is most cautiously, as far as science teaches, to be selected, prepared, and purified, before it comes to his enjoyment. His beverage, water, or any liquor,

At present :

discovered without great learning, and then be found remediable.

The chances for life, in which man stands yet equal with the brutes, are these:—

Man satisfies the cravings of his appetites pretty nearly as well, or as ill, as the brutes do. He imbibes air and water, such as nature or chance present to him, with all the accidental impurities and admixtures of stuffs injurious to health and life, as brutes do: he never knows how to purify them, nor cares for it, nor would his poor circumstances allow him to do any such thing that requires some combination of means and situation. He swallows a good deal of impurities into his stomach, from whence many injurious parts of his food are carried into his blood, &c. He swallows a great quantity of still more injurious stuffs, invisibly with his breathing air, into his lungs; from thence they are carried immediately into the innermost recesses of his vitality throughout his body, by transformation into blood, &c. He imbibes the same through billions of pores, with which the exterior of his body is perforated. He swallows a great deal of dust. So far man shares the ignorance, helplessness, and the fate of the brutes.

It may be objected, that we have physicians to apply to in case of sickness; and so we may, if we need not to be afraid of large bills, nauseous stuffs, &c.; but experiences teach, that among peoples who have no physicians, diseases, bad health, and mortality are at least not more frequent than among those who are amply provided with physicians. Still the patients

By the new means:

is also most cautiously to be selected, prepared, and purified for him: water, &c. is filtrated or distilled, so that all admixture of any injurious stuff is made impossible. The air he inhales is not the common atmospheric air, with all its injurious admixtures, but chemically purified and improved by wholesome invigorating admixtures, throughout his stupendous palaces; and this might be effected, even in the open atmosphere, by peculiar contrivances. The temperature is always such as agrees best with his feeling and constitution. He is never exposed to any unwholesome moisture, cold, or disagreeable heat and transpiration. His clothes are of a make so as to obstruct never in any way his perspiration and absorption of his skin. He never swallows dust, because there is none, neither within his palace, nor in the walks, &c., of the surrounding gardens, being both of vitrified substances, and guarded against dust from without by proper contrivances, and no filth being ever brought in or tolerated there. He never inhales the impurities, exhaled out of the lungs of men or animals, they being absorbed, by adapted contrivances of substances, by their chemical affinition. His transpiration is never kept between his skin and clothes; but the change and cleaning of clothes may be done hourly without trouble; they are there more objects of ornament than of necessaries. He may bathe himself at any moment in cold or warm water, in steam, or in some other invigorating and cleaning liquors, without trouble.

At present :

cannot do without physicians, and the physicians not without patients : all this is very natural in our present state of means and society. But what is lacking, is a far greater extent of means for multiplying experiments and observations, and enlarging the study of nature, a general diffusion of knowledges of their results, so as to enable every one to be his own physician in the best way, a situation, preventative against bad health. All this is unfeasible in the present state of general poverty and opposite individual interests, though most essential to life and health.

The chances for life, in which man fares a great deal worse than brutes, are these :—

He has to work, when he would fain rest. He has to watch, when he would fain sleep. He has to sit or stand still, when he would like to move about. He has to over-exert himself against his utmost desire. He has a great many bad habits, injurious to health, such as intemperance, in consequence of preceding wants or over-excited desires, grown into habits at length, in eating and drinking, unchastity, &c. He has to expose himself to wet, heat, and cold, while brutes will take shelter. He is confined to rooms or to workshops, where he has to inhale the bad smells and unwholesome effluvia of stuffs he is working at, and of men and beasts, which they transpire and exhale out of their lungs. He wears clothes, which, though they protect him but poorly against heat and wet, obstruct his transpiration, and the absorption of gas, necessary to his life, through the pores, which

By the new means:

Physicians may be had without pay: every adult will be a physician, with more physical knowledges than any physician could have acquired hitherto. The remedies will there consist more in preventative circumstances in diet, in making the best arrangements of all what affects and surround man, than in mere swallowing some nauseous stuff after the disease has taken place. Such are to be the chief objects of study and observation, not of a particular class of a few individuals, but of every human being through life, in union with all his fellow-creatures.

So man will no more be as ignorant as brutes in things that concern his health and life, but as much superior in knowledges as his intellect is to theirs.

The necessary consequences are, that man enjoys there constantly a vigorous health, with the bloom of youth and prime of life at an age, when now man is decrepid, and tottering towards his grave.

Man is then from his infancy, and already in the womb, formed with a vigorous constitution and happy disposition for a long and happy life.

That human life can be prolonged by known physical means, is no matter of doubt to any man who ever troubled himself with thinking about it. But to point out the limit of prolongation, is not for our age yet.

The truly useful sciences, the knowledges of nature, are yet in their infancy; they have gained general credit only since the last century; but what little is there

At present:

keep always more or less disagreeable smell of injurious dirt between his clothes and skin. The microscope shows, that the skin is perforated with billions of pores, as outlets or inlets of his body; that these pores are continually ejecting watery liquors, like fountains; and that these pores or canals are contracted or widened according as the surrounding temperature is cooler or warmer; observations teach, that they absorb from the next atmosphere. and that the whole state of vital functions is chiefly depending from these operations. He is too frequently bound to filthy lodgings for years. His clothes are generally of a fashion, that they keep some parts of the body warm, while they leave others uncovered, which but serves to increase the sensibility and evil consequences: the clothes keep him warm in the dry state, but keep him wet in rain and great perspirations, and cause thereby violent obstructions of the operations of his pores, that are necessary to health and life, till they cause fevers, rheumatism, or other diseases, which often enough end in premature death.

The brutes are exempt from such evils, except the domestic ones, which man has enslaved like himself.

There are yet other causes to shorten the human life, to which the brutes are not subject. Man is kept in troubles and cares, in anxiety, in imaginary fears, in angry passions or grief, from infancy to old age. He has to exert his mind against his will, in learning many things, that necessity or customs peremptorily

By the new means :

discovered of them is already enough for effecting what is stated.

There is no cause for intemperance of any kind; for there is never any over-excitement for it, the satisfaction of appetites being never opposed or obstructed, and whatever may injure health being removed, so that there be no temptation for mischievous enjoyments.

There is no cause nor object of fear and quarrels, no compulsion to any disagreeable occupation and situation, no oppressive cares, nor disgusting mental exertions to mean and little purposes. Man may live, move, play, rest, eat, drink, bathe, sleep, study, observe and do whatever he please, except what is hurtful.

That serenity of mind, happy temper, is the result

claim of him. His sensibility is thereby often over-excited, or his mind and feelings oppressed: the state of the vital functions is intimately connected with the mental operations; the feelings, and, in consequence, life and health, are affected thereby. Who knows not, that fear, fright, anger, grief, disappointments in love, &c., may cause fevers, and other diseases, and death, or premature old age; in children, obstruction in their growth and development of their nature, &c.? The brutes are subject to some of these evils, but in a very inferior degree, and, to many others of them, not at all.

Man is superior to brutes in chances for life in no respect. For—whatever he may boast of his superiority in knowledges and understanding—he knows generally but very little of his own nature, and nature in general, that may be useful for preservation of health and life. What we call, among us, sciences and arts, is generally but for amusement, for vain show, or for *getting money from our fellow-man,* the paramount object of all human endeavours in our present state of general ignorance and trivialness. We amuse and are amused with imaginary notions; grasp after shadows, and lose sight of what really could be useful for human life. For what avail all our speculations, all knowledges of useless or imaginary things, all possessions of money and relative wealth, if they cannot save us from suffering, sickness, melancholy, or anger, and premature death

of good health, of pleasant objects that affect the mind and feelings, cannot be denied, unless defying every day's experiences.

A combination of all the stated means must then produce a condition of men so much superior to the present of any man on earth, that our language wants words to describe, or to give some faint idea of it: it is but by reflection on the means presented, that the new sphere of life may be conceived.

At present :

Nearly one-half of men die in their infancy and childhood, and hardly one-tenth attain the age of fifty years, of which nearly all have then lost the prime of life.

The inherent affection of man for his family and friends causes the greatest distress to him. For he never is able to make them as happy as he would wish to see them ; but feels only multiplied his own sufferings by the sufferings of the objects of his love and affection. This faculty of man, so essential for his happiness and the preservation of his species, is generally a continual source of cares, grief, and vexations to him.

Conjugal love is lessened and destroyed at last, by disappointments, reciprocal claims and inability to satisfy them, avarice or dissipations on one or the other side, or other different propensities and desires in economical respects, vexations, disagreeable temper, negligence of personal appearance, want, cares, perplexities, disagreeable situation, weariness of each other by being compelled to live constantly together under various disagreeable circumstances and impressions. Matrimony is often but a partnership for pecuniary self-interest, where love has little or no share in it from the beginning. How many indifferent or unfortunate matrimonies are not to be found? Not one-tenth proves to be happy. Yet the love of the sexes is the strongest passion, and destined for the greatest happiness.

By the new means :

By the systematical arrangements, as pointed out, very few men will die a premature death; and the prime of life will have generally a far greater extent than fifty years.

Affection and love are fostered and heightened. They are the source of the greatest happiness of life. They are of the happiest effects upon the human character and social life, without producing any of the evil consequences now existing. The hostile feelings will be suppressed, and make room for sympathy with all fellow-creatures. Man's enjoyments and pleasures are multiplied by those of the objects of his affection and love.

Conjugal love is there the natural impulse. No pecuniary interest opposes nor prostitutes there the love. No compulsion is there to live and have intercourse together against their inclination. Nothing but love is left for cause to visit and to admit each other, every male and female adult having an apartment by itself. Most elegantly and brilliantly dressed and lodged, in the bloom of health, with a cheerful temper, without cares or troubles, living in the utmost cleanliness, surrounded but by pleasant objects, no disgust is ever occasioned, and love is ever new and pure. Independent in their respective situations, no dispute, or disorder, or despotism, can ensue. They come together but for pleasant conversation and mutual pleasure. Decency, fine behaviour, self-respect, need not there to be recommended—they are a matter of course; because every

At present :

Father and mother will do every thing in their power to make their offspring happy. They would sacrifice even their lives to save that of their children. They drudge and toil, not so much for their own benefit as for that of their children. They grieve at their sufferings, but too often in vain. They see them ripen to maturity, towards a life of disgrace, of poverty, of slavery, of drudgery and perils, of ignorance, &c.; but they cannot help it, or are not aware of it: they would die of grief, did they know the future misery of their beloved children; but the glimmering of delusive, flattering hopes, always for the best, cheers their minds only till sad disappointment. I every man's fate was faithfully recorded, what melancholy aspect of human life in general would we then have? Out of one hundred human lives not one would exhibit some cheerful picture. Every one may ask the histories of his own family and acquaintances, and see what heart-rending scenes, and mournings, and sufferings stept into the places of fond hopes. Poverty, want, fear of want, and their consequence, self-interest, stifle or diminish too frequently the affection even between parents and children.

Parents have to train up their children in dirt and rags, to toil and hardships, to sufferings and woes, and foresee them in part. Their children, in return for their affection, grow cold and indifferent towards them. They grow up in bad habits, sour, angry, and malig-

thing that disgusts, gives no pleasure; and no pleasure, no intercourse.

The children grow up without trouble in all the innocence, intelligence, cheerful and playful temper, natural to their age, with blooming health and countenance, most cleanly and beautifully dressed, and exhibiting thus to the eyes of their parents the lovely attributes of angels. This is no more than what the arrangements stated warrant.

Whatever is to be known of man, children may have learned at the age of eight to ten years, by mere beholding, handling, and examining the things exhibited to them in the palace and gardens, just with no more trouble, neither to the teacher nor to the children, than they learn now their mother-tongue.

Thus will love of the sexes and of parents be made a perpetual source of the greatest happiness, as it is destined to be.

nant dispositions, in consequence of their situation, and compulsory exertions against their inclination.

Thus the human mind, for want of agreeable objects about him, in consequence of an indifferent and miserable life, becomes peevish, angry, dissatisfied, malignant, quarrelsome, &c. These dispositions are not lessened by his intercourse with his fellow-men out of his family. Whoever has to deal with him, seeks his disadvantage, to gain by it: for the gain of one man must always be the loss of others. Man sees thus in his fellow-man a natural and necessary enemy to him. He is cheated and deceived by false appearances, and endeavours to cheat and deceive in his turn. He knows it is but fear that keeps his fellow-man from robbing him.

The poorer man is, the more he is neglected and slighted, as a being of little use or worth. The richer man is, the more he has to watch his possessions against cheat and robbery.

By the new means :

Friendship and socialness are not stifled by sordid avarice and covetousness. No mean self-interest is there the spring of human intercourse. There is no cause for quarrels and malignant dispositions, or vexation. The persons who please are courted ; those who do not please, are not sought for society. Every one may partake of any social pleasure, without interfering with that of any other person. Desire for pleasant intercourse is there the only motive that attracts man to man ; and without this desire there is no occasion for intrusion.

Men are all equally rich, and independent from each other ; for every one shares in all what he sees to superabundance. They are worth to each other as much as they give pleasure to each other by their dispositions and talents.

2. IN MORAL RESPECTS.

At present:

If morality is to have any utility and defined meaning, it must be justice and benevolence towards our fellow-men; without them the social state is worse than dreary solitude. For what is society good for, if it has not these ingredients?—To live among an aggregate of enemies or indifferent men, is the greatest misery of life.

There is but one criterion of justice and benevolence; this is, to do to others as we wish to be done to by others. This appeal to our feelings and desires is easilyunderstood by every one; but how is it with the practice?—Why, every one delights the most when he buys as cheap as possible, if possible for nothing at all, and to sell as dear as possible, if possible, nothing at all, without caring about what his fellow-man may suffer by it.

The reason why man acts so against his fellow-man is again plain enough to every one; it is because every one acts so against him; because this is the easiest way to get through the difficulties of living, because none has ever enough for himself and his family; and because he cannot get any thing for his living or pleasure, except by his labour, or by the labour of his fellow-men.

That every one claims such a beneficial morality from others is natural; and that none does practise it is again natural.

By the new means:

Man has there nothing to give to, and nothing to take from his fellow-man, except love and pleasure, and this will require neither labour nor money, nor any sacrifice. To give and to receive love and pleasure, without sacrifice, is the finest pleasure of life, and need not to be taught by speeches; but inherent feelings are far more powerful agents than all teachers and preachers in the world. All objects around man are agreeable, and cause by the impressions but agreeable feelings. No fear of want, nor of man, no object of fraud and deception, no traffic, no buying and selling, no opposite interest, no distinction of poor and rich, or of high and low, is there. Man has every thing he wants, or knows to exist in the world, without trouble, in superabundance, and secured for life. So there can be no grudge. So the happiness of one interferes there not with the happiness of others.

At present :

The wealthy lives upon the misery of the poor. The fortune of one is always to be built upon the losses and miseries of others.

The more wealth, the more means for happiness man thinks to possess. But as he cannot get wealth, except from his fellow-man, there is no satisfaction for him, except they become poor, while he gets rich ; but as wealth without servants would do him but little good, they must needs be his servants or slaves too. He would fain wish the rich would leave this world, and leave him heir to their possessions. But as still there would be no limit in his desires, as he could never think himself quite secure against the rapacious desires of others against him, the greatest satisfaction in the world could only be for him, if some universal mortality of wars, pestilence, famine, &c., would depopulate the world, and leave him and his family sole heirs to all the wealth in the world.

Is this, perhaps, an exaggeration ?—Ask the history of our times, of the most civilized nations, of our own continent. By the unsatiable desire for wealth, the innocent inhabitants of one continent were exterminated, and the same populated again with slaves from another continent, for work; yet there was never a want of teachers and preachers of morality and religion. Do we act now on better principles?—Are our desires and endeavours for wealth more moderate ?—Was there ever a man known whose desire for more wealth and power was at a stop ? The causes of this unsatiable desire and feelings of every one in opposi-

By the new means:

Man sees there the world is large enough, and rich enough, to afford superabundance of all things desirable for human life, for himself and all his fellow-men, for the present generation, and for many generations to come. He sees there, that nothing but ignorance kept man hitherto in misery, and in conflict with his fellow-man and with nature; that it is but the height of barbarous ignorance, to think that man must kill, rob, cheat, and oppress his fellow-man, for want of means to live happy in this world. His longing after happiness is there not in vain, and his satisfaction not derived from the sufferings of his fellow-man, whose happiness is essential to his own. His feelings are in harmony with those of his fellow-man, because his desires and interests are in union, and not in opposition, with those of others. His morality is in union with his interest and actual happiness. His natural desire is, there, to live in peace and harmony with his fellow-men. For it is there, not man's possessions of things, but man's social virtues and talents, that may be sought after.

tion to those of others exist as they ever have existed, and in consequence the evils also.

Man fears his fellow-man more than a beast of prey. Hence laws and institutions to restrain him. But these compulsive means seem to him not sufficient yet. He calls the hopes and fears of religion to his aid, and pays willingly his share for teaching doctrines to his fellow-men, that may keep them still more in awe against doing him wrong. But again man finds his fellow-men act the hypocrites, like himself, pay also their shares to the same purpose, profess one thing and do another, act altogether contrary to their professed doctrines, and are as cunning as himself. He gets highly alarmed, and wishes to keep, at least, religious fears and hopes, for the sake of his own security, in credit as long as possible. So we have many elaborate speeches of morality and religion, and they are often well paid too. Is any man so ignorant or so simple as not to know, that all the fine moral speeches do not affect the actions of man? — Man cheats and deceives his fellow-man, where he dares not rob him, and is deceived and cheated in his turn. What we call honesty, is generally but a prudent conduct, to gain belief in one's words.

Mean self-interest, poverty, fear of poverty, and of all its appending miseries, destroys affection, and sacrifices it to money. Parents and children, sisters and brothers, and friends, quarrel and prosecute each other to ruin, when their self-interest, their

By the new means :

Man sees in his fellow-man a helpmate for social pleasures ; there is no object of fear, nor cheat, between man and man. So there is no occasion for hiring men to teach others what they ought to do against their actual interest. All causes for enmities are annihilated, by the annihilation of opposite interests. There is no cause of crimes. A man of a sound mind can have no wish to hurt his fellow-creature, when it cannot do him any good; and if somebody should show then still some malignant disposition, in spite of all delights and friendly society, he must be insane ; and as such cases can be but seldom, they may be treated as diseases ; man will sympathise with the less fortunate, and not make it his business to increase the sufferings of the unfortunate.

Affection and love exercise their blissful influence on life without any hindrance. Friendship, affection, love, come never in opposition with self-interest. Accumulation of individual property would be there as ridiculous as accumulation of water now. Love

want, or fear of want, come into collision. The object of love is prostituted, forsaken for money, and rendered miserable for life. As every thing, out of want or fear of want, becomes venal, it becomes also an object of cheat and deception. So love is feigned and sold for money. He, or she, who marries more for the possession of things, than for the love of the person, prostitutes love, cheats his or her partner out of the greatest happiness for life, and is cheated so in turn. Those who would love and make each other happy, cannot or dare not marry each other, for want or fear of want; and those who cannot love each other, have to unite themselves for life. How few happy matrimonies are to be found is known. All the miseries of matrimonies and prostitutions, are the consequences of poverty and its appending labour and sufferings, and fear of poverty. Poverty is considered as the greatest misfortune, for the poor is neglected and slighted; he is but tantalized by the exhibition of wealth, enjoyments, and pleasures of others, and he knows the good things of this world are not for him, but only the labours, thorns, and thistles of it.

Want, and fear of want, chills all fellow-feelings, all sense of justice and benevolence. We see this best where man is free to act, in war. Man kills and cripples his fellow-man for sport or glory, with the same indifference as he would do with a deer or a dog, and is treated so in return, without caring for right or reason.

This is about the effective amount of morality.

cannot there be venal and prostituted; but love is only given out of love and for love, as nature dictates for the happiness of man. No depotism, no misery is there the consequence of this passion, so sweet, so self-sacrificing, and so necessary to life. There is no cause for compulsion or violent restraint against nature. Every adult male or female person lives independent, in a separate apartment; and—no love, no intercourse—respect and love are there the only weapons to gain love. Love is there not soiled by drudgery and cares, and fears and disgust. Only the pleasures of tender love in matrimony may be fully enjoyed, without its disagreements, now so common. Love is then, what it ought to be, a source of the greatest happiness.

Parents need not to compel their children to do any thing against their inclination. A system of education may and will be introduced, to prevent bad customs, and to cultivate good amiable feelings. Children will see themselves only among tender friends, and never under masters or sour-tempered monitors. So they will love their parents and guides by natural impulse.

Peace and harmony, and but friendly intercourse will be among individuals and nations; for every people, as well as every individual, will have more means for enjoying life than they want. The more intelligent nation will have means to keep the less intelligent peoples in awe. On both sides they will find it their advantage to keep peace and friendly intercourse.

3. IN INTELLECTUAL RESPECTS.

At present:

Whatever man knows, he had to learn either by his own observations, or by instructions from others.

If man knew no more than what he had learned by his own observations in nature, he would know not one-thousandth part of what he knows. But he derives his ideas, language, and arts, from the experiences and practices of many millions of his contemporary fellow-beings, and of many antecedent generations of times immemorial.

Men have now a very unequal chance for learning. One may rove in all the historical and scientifical knowledges all over the world, and pass his life in study of books, and records of all known ages, and of nature, while his neighbour has no more chance for learning any thing of what is beyond his horizon, than a brute.

The mere knowing, however, makes not happy, as little as the mere possession of wealth; but both are but means, of which only a wise application may increase happiness

Wealth of intellect is, however, far more valuable than physical wealth or money; and wealth of intellect may procure physical wealth, but all the money in the world cannot procure intellectual wealth: the latter requires time, favourable circumstances, and study. Besides, a man of intellectual wealth may live happy without physical wealth; while a man of

By the new means:

Whatever man learns there, he learns by his own observations; the objects of human knowledges being placed before him, so that he cannot be deceived.

The instructions of others are to be documented by visible things. So there can be no delusion. The safe criterion of truth is always ocular demonstration by analogy: this again requires comparisons; and the more knowledges of things, the more extensive comparisons can be made, and the more truths ascertained.

Men have there an equal chance for learning. They will learn there in one year more than the most learned could learn in all his life. And there will be as much difference between the intellect of man in the new state and that of the present, as there is now between the most learned and the most ignorant.

The knowledges are made beneficial to the highest possible degree for every human being at once.

It is by this increase of intellectual wealth, by its equal distribution among all members of the human family, that peace and good-will among all, and general happiness is chiefly effected. Man's own self-satisfaction, a never-failing source of the finest pleasures and delights, and highly useful instruction is produced by an infinite intellectual wealth. This

At present:

physical wealth and intellectual poverty, will generally enjoy a very inferior degree of happiness.

Though want of intelligence is either not at all or but little felt of the individual who is ignorant of his defect, yet it is far more grievous than want of physical wealth. The man who is born blind knows not his misery; so the man who is trained up in ignorance, knows not the difference between ignorance and superior intelligence. There is as much difference in that respect between man and man, as there is between man and brute.

Therefore, it is the greatest tyranny and injustice, when men are put under so unequal chances for learning as the case is now. These injustices are carried to the height of barbarity, if, in spite of these unequal circumstances in which men live, the laws and institutions are made as if all men had equally acquired full knowledge of all the things to be known.

It is owing to these unequal chances for intellectual culture, that there is so great a variety and contradiction of opinions among men. Every family, and every individual, has its own sphere of impressions and ideas; and again, every sect, party, or nation. They reciprocally recriminate each other of

By the new means:

wealth is acquired without trouble, but with ever increasing pleasure. Man needs but to observe the objects placed before him. He has means to accumulate all things of the world, and to combine them for his instruction. Whatever combination of circumstances man may think of for investigation, he is enabled there to realise them without exertion. The more man learns, the more he becomes aware of his preceding ignorance and errors, and the more he discovers means for increasing his knowledges. It will be with intellectual wealth, as it is now with physical wealth,—the more man has, the more he will and can acquire; with this difference, however, that intellectual wealth can never get lost. Man will there be under no limit of means for increasing his knowledges. Physical wealth will there be no object of human endeavours any more.

There is a surety, that all men know all things of a general nature to be possibly known by man; and therefore a surety that all men are equally convinced of what is or is not; so there is nothing in contradiction with the minds of men in all laws and institutions, which are but originated in the general conviction and will of the people. There will, in consequence, be no more dispute about any demonstrated truth, than there is now about colours or shapes, as little as there is now about what is square, round, black, or white. So it will be there with every reality within the perception of human senses. And whatever is out of the reach of human senses, and

At present:

folly and perverseness about differences of ideas, which they do not fully or not all understand of each other. Those who suppose themselves to be better informed than others, pride themselves of it, and despise the supposed less intelligent; these again feel the injustice, and recriminate others in their turn.

Thus the injustices are reciprocally heightened by superciliousness of real or gratuitously supposed superiority of knowledges and intelligence.

In addition to these injustices and irrational feelings, the better informed is more respected, and enjoys greater pecuniary advantages than those of less information, though they had very unequal chances for it.

Despotism of governments and priesthood have introduced, in times of gross ignorance and childish superstition, ideas and customs, by enforcing them upon the minds of children before they could reason, instead of useful knowledges of realities, which notions have been handed down from one generation to another, until our time. Ignorant and weak minds are the least capable to examine them, and to discern truth from error. Such miserable beings imagine now to know a great many things, while in fact they are but poor dupes of superstition, and are in a degree rendered insane by delusive notions.

Thus we receive generally a great deal of instruction in various ways from others. But these instructions are either lies or truths. If they are lies, they must lead to endless errors, and dangers, and mis-

consequently not demonstrable, will soon be discovered to be no object of rational dispute.

There is no occasion either for imposing lies or for enforcing truths upon the minds. Let every one, child or adult, first acquire all the knowledges of things that be in existence, by showing the things themselves; let the useful application be made, let him then compare his old notions, whatever they be, with those new knowledges; let him see the contradiction, and choose for himself what he pleases. There will be no compulsion, no dispute about opinions, as soon as men will have acquired full knowledge of all what is to be known of the visible world; and till that period arrives, let there be a suspense of all animation about different notion. It is not by contradicting assertions, that man forsakes his notions; it is by substantial proof, evidence of his senses, that he may correct his error. And even in these cases, the de-

chiefs. For all conclusions drawn from false premises must always be erroneous. Men who are thinking and acting from false suppositions, will always imagine, see, and expect things that have no existence, and are thus as unfortunate and dangerous as lunatics.

If men had ever lived in a state of innocence and sincerity—if at least the majority had always been wise, well-informed men, free of our common frailties, and incapable of being deceived—if there had never been causes for individual self-interest—if there had never been opposite interests among men, and consequently no inducements to cheating and lying—then we might yet continue to do like little children, faithfully believe all the stories handed to us from our progenitors for our instruction and guides, and never trouble our understanding with examining them and the circumstances under which they originated, and comparing them to what our present experiences may teach.

But we see, to our grief, this will not do. The world is full of lies, frauds, and contradictions; for every one wants to gain advantage on his fellow-man, which is impossible, without insincerity. We see the

monstration ought never to be begun with assertions that contradict any old notion: but conviction of the things that exist must first be established; then let him his old errors compare with it. Old, inveterate prejudices, must be treated, like diseases, with caution, not, like faults, with irritation. A madman and a man of prejudices are alike in imagining things as realities, though they do not exist; both are but irritated at contradictions to their notions, and can only get cured after they have discovered themselves their fancies to be errors.

A general state of sincerity, innocence, and true intelligence will then come into existence; because there is but one general interest,—to be and to see all fellow-men intelligent, well-informed, and happy, in order to increase thereby the general happiness. It will there be as disagreeable to see an ignorant, superstitious, or misinformed, unhappy, human being, as it is now to see a poor, insane, or a deformed man, for whom we can but feel pity. Every thing can there but contribute to promote innocence, good-natured dispositions, and intelligence. They will soon cease to be dupes of ancient ignorance and barbarity, and look upon the past errors and ignorance with disgust and horror.

The causes for lying and cheating are removed. If any man should lie or cheat, still it would be of no great consequence, and always prove to his own disadvantage; for he would not be believed again. There

At present:

practice of deception every day before us, in small and and great affairs, by individuals and nations.

Every one is impelled by his own wants to act like others do; and that man would be considered as a fool, who would act with perfect sincerity and implicit belief in every man's words.

The criterion and way of examining for discerning truth from lie is hence become problematic.

To resolve this problem is often very ill paid. It is known that such endeavours have been punished by fire, sword, dungeon, defamation, &c., while lies were honoured and well paid.

Such have been generally the inducements for telling truths on important subjects!

Such is our present miserable state of general intelligence, and nothing is done to improve it, except some degree of toleration for those who venture to speak against general errors and deceptions.

We are trained up in filling our memory with words and confused notions; and learn some insipid mechanical occupation for gaining our livelihood from others.

All our aim is to be, to gain advantage on our fellow-man; but to gain advantage on nature for general improvement of the human condition is not thought of yet.

By the new means:

would be, at all events, but little gain on one side, and little damage on the other.

Fraud and lies can have no field for practice, and the natural sincerity of one will produce sincerity of the other in return; for insincerity never pleases, and never interests.

The criterion of general truths will as plainly be understood by every one, without teachers, as a child knows how to discern cold from warm, wet from dry, sharp from blunt.

By degrees all causes for apprehensions for telling truth will subside; and then will men become rational.

It is not for men brought up in prejudices and errors to judge of superiority of intelligence. It is only for self-reflecting men, that now may soundly judge of what the state of better general intelligence must then be.

Man sees and examines there the things themselves.

There is no inducement, no interest, to hurt any man's feelings or happiness; and the discovery of one is equally beneficial for all, to the highest possible degree, without prejudice to any individual.

At present:

Nature is productive, beyond all calculation, under the lead of rational man: she displays continually her activity in endless mysterious productions. All is riddle to us. However, we see means and powers infinitely superior to all human wants, if we but open our eyes and understanding.

But such is man's folly and ignorance, that he cares little for all the substantial things for human life and happiness; if he could only turn every thing into gold or money, to buy the labours and dangers of his fellow-man, then he would conceive himself happy. What a trifling creature!—with all his boast of being the sublimest thing in the universe. Such is but one consequence, among many equally deplorable, of our present intellectual condition.

We know not one ten-thousandth part of what the most ignorant among us thinks to know; and we know not one-thousandth part of what every man could and ought to know, for his own happiness. For all our progenitors, for thousands of years, passed their lives like we, if not worse, in a general state of ignorance, and erroneous, superstitious notions about every thing in the visible world. The reason is plain: there was never any united co-operation for great and useful purposes: a few had to domineer over the many, by craft: single individuals' reasonings and discoveries,

By the new means:

Gold, or any thing of high price and of no intrinsic value, will be looked upon as a childish trifle of no value: for they can, even for ornament, their only use, be substituted by other things, that answer equally or better the same purposes, in any desired quantity. But the really beneficial produces of nature will be created in superabundance for every man; and all the study and delight will be directed towards such objects, that may meliorate human life, not for some certain individuals, but for *all* men.

It is not but till then that man will become a rational creature, consistent with himself, and with nature, and in harmony with his own race, with gigantic powers, means, and objects of activity. He will see then that men lived hitherto, through ignorance and errors, like wolves, fighting for prey among themselves, when they could live in harmony, and superabundance, and felicity, like gods.

Men will then have ideas of their own nature, and the world in general, very different from what they are now; for they can and will explore ten thousand

contrary to vulgar notions, were disregarded, or even punished in some way or another, or they had to hide their knowledges.

What there is now of sciences is taught but to a few, in fragments, and in a very imperfect and laborious manner, both to the teachers and learners. There are but poor provisions for materials of instruction, except books. The study of human nature, and of universal nature, and the application of the acquired knowledges, are to be derived from experiments and observations, in generalising the conclusions drawn therefrom ; but this is done but in a very limited extent, to very limited purposes, with very limited means, and not one ten-thousandth part of men in the most civilized nations is acquainted with the results thereof.

We have a great many Greek and Latin names for the various branches of the science of nature, which do not add any thing to the clearness of conception. An universal study of nature is hardly ever attempted by any individual; but it is done in fragments for but petty purposes.

This state of mental culture is owing to but general circumstances, and chiefly to our preceding ages.

To describe the errors and defects of our present education and studies would fill volumes.

The well-informed and reflecting minds know them, and the rest would not understand them. Therefore these hints may suffice.

times more of it, than we know now, within one generation, and will have removed all the childish erroneous notions of nature, and man himself that now exist.

Men will have their mighty means in operation for exploring whatever be an object of human knowledges over all the world; and the results will be known to every one by new means of rapid communication.

Though we have, by the art of printing, a great advantage over the ancients, yet the means of communication will be immensely more rapid and general than now ; so that any important event or discovery may be diffused and known to every man throughout the world in a few weeks, without pay or labour of any individual : and no individual interest will hinder the universal diffusion of new valuable discoveries or ideas.

There will be but one science,—but one way to learn ; and no laborious study and teaching. This science will be the science of nature, where every thing is connected with every thing ; and no part can be well understood by itself, unless its relation to the whole is taken into view. It is there not the names, that puzzle the mind, but the thing themselves are to be seen, observed, and examined, before their names, classification, &c., be noticed. The chances for seeing, hearing, feeling, smelling, tasting, and reasoning, will be open to every one through life. All the valuable knowledges of the human race may thus be learned by every child, with no more trouble than it learns now, what is a house, tree, apple, horse, &c., with their uses.

The glaring difference between the present and future condition of man is justified by the preceding statements; but those who do not pay attention to accurate reasoning will not understand them; and I declare, I do not possess the talent to express myself intelligibly to those who do not pay attention to me.

I am an human, and as conscious as any man can be of being liable to error. But I have stated the reasons of all my assertions before the public. The attentive reader will perceive that I took a great deal of care to guard against error in this untried matter. I have offered any further explanation desired on the subject. What could I do more?

The objects stated are manifestly of paramount interest to every human being. I have a right now to declare, and every man of good sense will join in it, that whoever looks on these objects with indifference, and does not bestow his full attention and most serious reflection on it, has no rational claim to be ranked with man. I shall retract this declaration, and submit to any atonement required for it, as soon as the stated fundament of the proposals be proved to be absurd.

It would be inexcusable in me not to apply to our Government in this case so important for the nation. I think, therefore, I owe it to the public and to myself, to inform the reader, that I have made application, simultaneously with the publication of this book, to the Congress and to the Chief Magistrate of the nation; and as it may be material to know the manner of my application, I annex the copies of both applications, of which the results will be published.

To the Honourable the Senate,
and to the Honourable the House of Representatives of the United States, in Congress assembled.

The petition of the undersigned to your Honourable body most respectfully shows,

The petitioner brings before your Honourable body a subject that appears to him of the utmost importance to the nation and to the whole humankind at large.

The subject is explained in a book just published, entitled :—

The Paradise within the reach of all men, without labour, by powers of nature and machinery; an address to all intelligent men, &c.

Of which a copy is adjoined hereby.

This book shows means to exalt the American nation to power, wealth, and a general happiness superior to all what was ever conceived by man, within a period of less than ten years.

The book is published for the purpose of forming an association for the execution of the proposals explained in it, in case the Government of the United States should not take the exclusive direction of this new great cause.

The substance of this book is—

1. It is proved that there are powers at the disposal of man, million times greater than all human exertions could effect hitherto.

These powers are derived—

a. From wind.

b. From the tide.

c. From the waves of the sea, caused by wind.

d. From steam, generated by heat of the sun, by means of concentrating reflectors, or burning mirrors of a simple contrivance

2. It is shown how these powers are to be rendered re-active, so that, notwithstanding all irregularities and intermissions of them, perpetual motions of uniform powers to any desired extent and magnitude may be produced by them.

3. A system of application of these powers for superseding all human labour.

4. The objects attainable by the system of application.

5. A constitution for an association, and the conditions for communicating the remaining details of the inventions.

6. In the second part, the course to be taken in the United States for attaining all objects explained in the first part.

7. A view of the condition of man, arising from the application of the proposed means, in comparison to the present general condition of man.

Every thing necessary for the conviction of the stated truths is contained in this book, except one simple mechanism of a machine for doing all works in hard materials, in earth, wood, or rocks, and some details of establishments, which shall be communicated as soon as the fundamental truths, proved in this book, are examined, and acknowledged as far as essential to the purposes in view, and a way be shown and

guaranteed to the author, to patronise his interest, be it from an association, or from the Government.

Your petitioner humbly proposes to your Honourable body

To appoint, for examining the subject of the book, a committee, whose objections, questions, or doubts on the subject, it is, however, most essential to communicate to your petitioner, who will join his replies to their report, for your further decision.

In submitting this subject for your consideration, your petitioner has not so much his own personal interest in view, as the interest of the nation, and human kind at large.

The new truths of the book will soon be promulgated throughout America and Europe; and they will find a ready reception in the congenial spirit and knowledges of the present days.

Your petitioner deems it of the greatest importance to offer humbly, of these truths, the first cognizance to the Great Council of the freest and happiest nation on earth; this country being the most favourable for the introduction of these new means into practice. But in doing so, he apprehends nothing so much as that his proposals might be mistaken for extravagance, and therefore be slighted before examination: he fears it, not so much for his own individual interest, as for your honour and glory, and for the glory and happiness of the nation. For if the American nation should not be the first to make use of the proposed means—some other nation must be it, and may then, with them, rule over the rest of the world.

Your petitioner is convinced, as well as any man in the nation can be, that, had he proposed an object which would bring some millions of dollars into the national treasury, your sense of your exalted duties, your patriotism and wisdom, would prompt you to bestow your most serious attention upon the subject. But when a subject appears before you that promises ten thousand times more—will it not be taxed an extravagance, unworthy your consideration?

Your Honours, this is my case; but it is not my fault—it is the fault of past ages—of their having paid no attention to the subject proposed.

I ask humbly your wisdom—what shall I do in such a case? Shall I consign with me the greatest discovery ever made to the grave, for fear of being taken for insane and derided?—or, shall I not rather apply all the means in my power to invite the attention of the governments of the civilized nations to the subject? Or, if I cannot succeed in such endeavours, shall I not, as my last resource, solicit the attention of the most intelligent part of the public on the subject, when I can show plainly the ways and means for deriving incalculably great benefits from it?

I have chosen both latter ways: I have offered the discoveries, first, at once to the Government and to the Public of the first American nation. If I am wrong, the book shows it; if I am right, nothing material can be disproved; and in this case, I must pursue my course towards realizing my great objects, wherever I find the first chance for it.

I am aware that other discoverers of great, valuable things, were taken for insane, even by governments—

but I know also, that some of them found favourable reception of the Government of the United States.

One simple truth will often lead to an endless concatenation of other most important truths, never thought of before. So it is with mathematical truths —those who see then but the final results, without studying the fundamental truths, cannot believe them, and very readily deem them to be fables. The discoveries of the system of the universe, the new continent, the law of the lever, the art of printing, the power of steam, and a hundred others, which all proceeded from simple truths, and led to infinite results, are examples. But when the discoverers had no authorities of men yet for their support, but only sober reason and arithmetic, like I have now, to appeal to, they were disbelieved; and it was thought even a disgrace to condescend so far as to inquire into their reasons. Whether my exhibited truths shall have a better fate in this country, is now depending from your decision.

The fundamental truths, in the present case, are so simple, that a child of ten years may easily comprehend them. They are only these:—

That the wind, the periodical rise and fall, and the motions of the ocean, and the transformation of water into steam, afford ten thousand times more power than the whole human race may ever want for all imaginable purposes; that these powers can be rendered operative *uninterruptedly;* that by reflectors the heat of the sun can be concentrated, and any desired heat produced; that by this heat steam can be generated; and sand, clay, and other vitres-

cible substances can be vitrified; that the finest cultivation of soil, and all works in the ground, can be effected by one simple contrivance; and that very large vehicles can be moved by such great powers; and that pliable stuff can be composed and formed into any desired form.

There is nothing absurd or confutable in all these fundamental truths; and they will appear quite common things. Yet they are more than sufficient to produce a total revolution of the human race, as soon as understood; for they can effect in one year more than hitherto could be done in 10,000 years, and things unheard of. The world will take a quite different appearance than it has had hitherto to man; productive of thousand times more means for human happiness, than the human race may be wanting; a paradise beyond the common conceptions.

A brief statement of the attainable objects may not be improper here, which the book shows more plainly.

The whole country changed into one garden, superior to whatever human hands could effect hitherto; the ground covered every where with the most fertile soil, with all desirable vegetables of the climate, in any desired arrangement; the swamps and lakes filled up, and drained; the rivers, creeks, &c., narrowed into channels of vitrified substance, bordered with dams against inundation; elevations or excavations of ground for any desired purpose; canals and aqueducts for irrigating the soil, at any time, any where; ponds for fishes, on bottoms and with borders of vitrified substance; the water of canals, rivers, ponds, &c., in its utmost purity, distilled or filtrated. Roads

of large tables, many feet thick, all as in one solid piece of vitrified substance, hard as flint; with iron rails; with establishments for propelling vehicles, carrying many thousand tons and men at once, running at the rate of 1000 miles per day, in every direction, from the Atlantic to the Pacific Ocean. Mines of any extent and depth. Palaces, superior in magnificence, grandeur, and commodities, to any thing known; of crystal-like appearance, inside and outside; and indestructible for thousands of years; constructed as if of one entire piece, for the common habitations of men every where; floating islands of light wooden stuff impervious to water, made of any kind of wood, covered with fertile soil, bearing trees, and all kinds of desirable vegetables, with palaces and gardens, and thousands of families for their inhabitants, exempt from all dangers and incommodities; which may move by powerful engines at the rate of 1000 miles per day through the ocean. Man may travel over land, and see from pole to pole in a fortnight; from America to Europe in three to four days with a certainty. All things desirable for human life, when once known, may be rapidly multiplied, without labour or expense, to superabundance for every one; and wealth become as cheap as water. The establishments and machineries multiply themselves, being of a quite simple construction. Soft furnitures, for commodities, or ornament and dress, are produced withou labour, in the form, fashion, or quality wanted, ready made; being cast in a similar manner as paper, of cohesive and fibrous substances, fitly prepared; without any carding, spinning, weaving, sewing, &c. In applying the present sciences of physics, superior food

and beverage, scientifically prepared, and purified from all admixtures injurious to health, superior air for breathing ; and a superior life in every respect to what was ever in practice, may prolong life to an extent not to be foretold. Man sees, by these new means, himself exalted to a superior kind of beings. He may not only *enjoy* his life in a far superior manner, but means are afforded to learn in one year more highly useful things to be known, than the most learned could not learn in all his life hitherto, and without laborious study.

All such things may be effected within less than ten years, beginning with a principal not larger than a turnpike, or a canal of twenty miles costs now, which may be collected by shares of twenty to fifty dollars; but for the Government it would be a trifle. No risk, no confidence, is asked, except the trouble of examination.

The same powers may also be used as weapons for conquering and subjecting nations: because they afford means to which neither gunpowder nor armies of any number of men can resist. Europe will be approached to America within three or four days' journey, by means of impregnable fortresses. The question will hence be, whether America or Europe is to be the ruling power? And this question is now brought before your Honourable body. The fate of the world is thus depending from your decision.

Your petitioner will, as in duty bound, for ever pray, &c.

Your most obedient humble servant,

J. A. ETZLER.

Pittsburgh, February 21, 1833.

To his Excellency, Andrew Jackson, President of the United States.

Sir,

In sending a book to your Excellency, entitled "The Paradise," &c., and copies of petitions to Congress, I think I fulfil a most important duty towards the nation, whose glory, power, and general happiness, is trusted to your care.

I promise to show what no man ever did, and offer mathematical proof for it. I desire nothing so much as a suspension of judgment on the subject proposed, until an examination and fair understanding of it be effected.

The book is addressed at once to the Government of the United States, to the American nation, and to all civilized nations and governments, and will soon find its way through America and Europe. I have no hesitation to confess, that I shall seize upon the first opportunity for application offered to me any where.

For I know that other discoverers of great, valuable things had to labour with difficulties, for gaining a fair hearing, and examination, and execution, ten or twenty years; and some died of grief in poverty, though their discoveries enriched nations after their death. Human life is too short and uncertain, as to submit patiently to such a fate.

It would be of the happiest consequences for the whole human race, if the unavoidable revolution of the human condition that must take place, in consequence of the progress of human intelligence (knowledges of

new powers and means), throughout the world, would originate in the United States; where situation and national constitution are eminently more favourable to the free development of the human powers for general happiness, than any where on the globe.

Every friend to humanity would therefore rejoice, if the Government of the United States could be prevailed to bestow attention upon such subjects as proposed; and it will certainly behove to the dignity of an enlightened people, not to send new proposals home without inquiry into the reasons, because they may *seem* extravagant.

If any thing material can be disproved in my statements, I am silenced for ever; and the Government will be justified in the eyes of the nation, and of other enlightened peoples, for not taking any further notice of the subject. But in the contrary case, your Excellency may judge what the consequences would be.

I humbly leave it to your Excellency whether, and in what manner, you will please to favour the proposals.

I am, most respectfully,

Your most obedient humble servant,

J. A. ETZLER.

Pittsburgh, February 21, 1833.

John Brooks, Printer, 421, Oxford Street.